This is a manuscript, but not a publication. It is not issued for permanent scientific records and is disclaimed for the purpose of zoological nomenclature in the sense of The Code of Zoological Nomenclature article 8.2 (ICZN, 1999; Russian translation, 2000).

]Subgenus *Chrysolina* s.str. Motschulsky, 1860a

Diagnosis

Dorsum unicolorous: 1) rufous without metallic reflection, 2) rufous, brown or black with metallic reflection (golden, bronze, aeneous, green, olivaceous, blue, violet).

Last maxillary palpomere in male broader than in female. Male last maxillary palpomere trapeziform, broader than penultimate one.

Antenna inserted closer to clypeus than to eye, narrow.

Pronotum broadest basally or before base, swollen laterally along entire length, with lateral impression distinct to obsolete. Pronotal disc finely to obsoletely punctate. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore absent.

Prothoracic hypomeron from almost flat to weakly convex, laterally with shallow impression filled by weak wrinkles; with outer border, at least anteriorly. Basal fold strong.

Intercoxal prosternal process medially impressed, with elevated lateral borders, at least apically. Metasternum entirely marginated anteriorly.

Elytron with weak humeral callus (in the species with developed hind wings), or without humeral callus (in the species with reduced hind wings).

Elytral puncturation double (large and fine punctures), dense, mostly irregular. Large punctures partly forming rows.

Elytral epipleura inclined outside, visible along entire length in lateral view or almost horizontal in apical ⅓ and hardly visible there in lateral view, ciliate near apex.

Hind wings reduced or normally developed.

Tarsomeres 1–3 with entire sole; in male slightly broader than in female. Claw tarsomere without denticles beneath.

Pygidium with weak longitudinal impression.

Last abdominal sternite evenly weakly convex, with apical margin broadly truncate or very weakly broadly emarginated.

Aedeagus narrow, oval in cross-section, moderately evenly curved, rounded apically, without apical denticles, with flagellum narrow, simple, slightly exposed.

Differential diagnosis

Chrysolina s.str. is morphologically close to the subgenera *Threnosoma*, *Colaphoptera*, *Sphaerochrysolina, Cyrtochrysolina, Lopatinica, Timarchida* and differs from them in male last maxillary palpomere broad, trapeziform. Besides that, it differs from *Colaphoptera*, *Cyrtochrysolina* in aedeagus apically simple, without denticles; and from *Lopatinica* and *Timarchida* in prothoracic hypomeron bearing outer border (at least, anteriorly), from *Timarchida* in elytral epipleura ciliate apically and last abdominal sternite much less convex in both sexes.

Bechyné (1950a) proposed *Ch. stachydis, Ch. fragariae*, and *Ch. coerulipes* to be the members of the subgenus *Chrysolina* s.str. I believe, they belong to some other subgenera. *Ch.* (*Stichoptera*) *stachydis* differs from the members of the subgenus *Chrysolina* s.str. in last maxillary palpomere narrow, oval, not broader than penultimate, elytra with dense regular rows of large punctures, and aedeagus typical of the subgenus *Stichoptera*: strongly curved, bearing distinct apical denticles on ventral side, and protruding medial lobe of apical opening (looks like fish mouth in lateral view). *Ch.* (*Rhyssoloma*) *fragariae* differs from the members of the subgenus *Chrysolina* s.str. in the outstanding relief of elytral lateral sides (impressed and irregularly wrinkled, looks like monstrosity), last maxillary palpomere narrow in both sexes, not broader than penultimate, and simple, fine, regular elytral puncturation. *Ch.* (*Pierryvettia*) *coerulipes* differs from the members of the subgenus *Chrysolina* s.str. in pygidium bearing distinct longitudinal furrow with sharp borders, last maxillary palpomere narrow, and prothoracic hypomeron bearing sharp border laterally.

Key to species (and subspecies of *Ch. staphylaea*)

1(10) Hind wings normally developed, longer than elytron. Elytron with weak humeral callus.
2(9) Body mostly smaller: 5.9–8.1 mm long. Pronotum 1.5 X broader between posterior angles than between anterior ones. Elytral puncturation double: 1) moderately large punctures and 2) fine ones; both types of punctures are dense, distinct. Elytral epipleura inclined outside, visible along entire length in lateral view. Pronotal lateral impressions broad, developed along entire length, filled with large punctures.
Ch. staphylaea (the subspecies are keyed below)
3(6) Dorsal surface with distinct metallic reflection.

4(5) Dorsal surface rufous till reddish-brown, with distinct bronze reflection. Elytral puncturation moderately large, looks like irregular: puncture rows indistinct among dense punctures in intervals (Fig. 18); rows sometimes visible near scutellum. Pronotal lateral impressions usually without vertical outer border; if with border, then it is lower than in the next subspecies. Length 5.9–8.1 mm. Figs. 1, 2, 12. Holarctic.
Ch. staphylaea staphylaea (Linnaeus, 1758)

5(4) Dorsal surface reddish-brown, with distinct bronze reflection and weak blue or violet tint. Elytron with 10 puncture rows; punctures larger than in previous subspecies; rows paired, undulate, partly irregular, intervals covered with fine punctures (Fig. 19). Pronotal lateral impressions usually with vertical outer border. Length 6.4–6.8 mm. Figs. 4, 10. N-W Caucasus (?), Armenia, Asia Minor.
Ch. staphylaea lederi (Weise, 1878)

6(3) Dorsal surface rufous, without metallic reflection.

7(8) Dorsal surface usually dull, rarely weakly shining; elytral puncturation rougher than in *Ch. staphylaea staphylaea*, with weakly wrinkled intervals (Fig. 17). Length 6.2–7.3 mm. Chita reg., Amur reg., Okhotsk sea. *Ch. staphylaea daurica* (Gebler, 1832)

8(7) Dorsal surface weakly shining or dull; elytral puncturation as in *Ch. staphylaea staphylaea*. Length 6.3–7.7 mm. Great Britain, White Sea shore.
Ch. staphylaea sharpi (Fowler, 1890)

9(2) Body mostly larger: 8.1–10.2 mm long. Pronotum 1.9 X broader between posterior angles than between anterior ones. Elytral puncturation double: 1) large, dense, hollow-shaped, dense punctures, 2) very fine, obsolete ones. Elytral epipeura almost horizontal in apical ⅓. Pronotal lateral impressions broad, moderately deep along entire length, placed close to lateral margin, covered by moderately large, not numerous, partly coalescent punctures. Above dark bronze, brownish bronze, brownish greenish bronze, green, with aeneous tint, greenish olivaceous, violet; underside (including elytral epipleura), clypeus, antennae, and legs testaceous. Length: 8.1–8.6 mm (♂), 8.5–10.2 mm (♀). Fig. 3. Mediterranean reg., introduced in N America.
Ch. banksi (Fabricius, 1775)

10(1) Hind wings very short. Elytron without humeral callus. Pronotum without lateral impressions or with weak impressions near base or along entire length and slightly deepened near base.

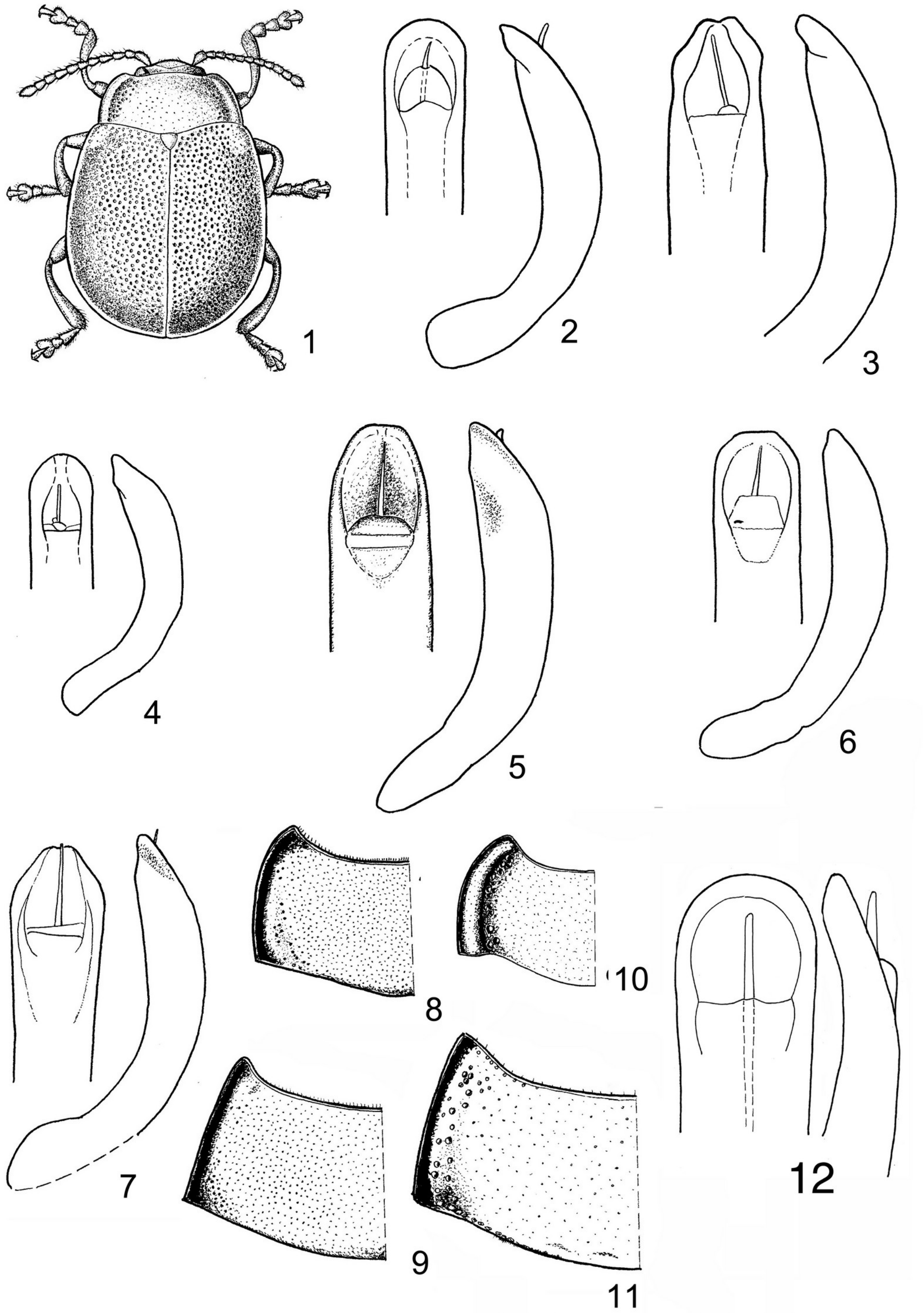
11(12) Species from European mountains. Pronotum laterally covered with small punctures, which as large as those at pronotal disc, or some larger. Pronotum broadest basally, with rounded or almost straight lateral sides, more or less strongly convergent anteriorly. Elytral puncturation double, moderately large punctures irregularly placed or partly forming more or less regular rows, intervals covered with very fine punctures. Above brownish red with purple or brassy reflection, bronze, dark bronze with violet reflection, or black with blue or greenish brassy reflection. Length

6.0–8.5 mm. Species includes 7 valid subspecies. Intraspecific structure should be revised. Figs. 5, 6, 8, 9, 13–15, 20.

Ch. rufa (Duftschmid, 1825)

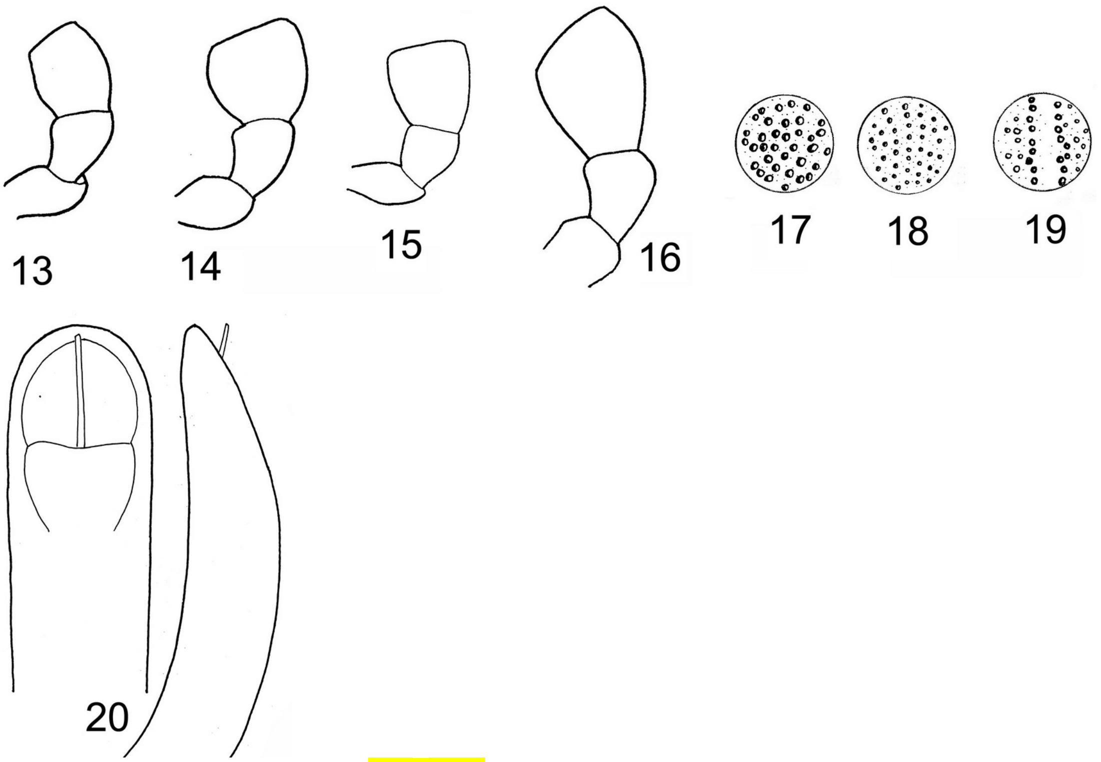
12(11) Species from Egypt, Syria, Palestine, Cyprus, and Turkey. Pronotum laterally covered with large punctures, which much larger than those at pronotal disc and almost as large as those at elytra. Pronotum with lateral sides almost straight, strongly convergent anteriorly. Elytral puncturation double, moderately large to fine punctures forming more or less regular rows, intervals covered with very fine punctures. Above red or light brown. Length 7.5–10.0 mm. Figs. 7, 11, 16.

Ch. blanchei (Fairmaire, 1865)



***Chrysolina* s.str. figures 1–12:** 1 – *Ch. staphylaea staphylaea* (Moscow reg.); 2–7 – aedeagus, dorsal and lateral view: 2 – *Ch. staphylaea staphylaea* (Orenburg reg.), 3 – *Ch. banksi* (Andalusia), 4 – *Ch. staphylaea lederi* (*Chrysomela lederi*, lectotype, Armenia), 5 – *Ch. rufa robusta* (Slovenia), 6 – *Ch. rufa biharica* (Hungary), 7 – *Ch. blanchei* (Lebanon: Beirut); 8–11 – pronotum, left ½: 8 – *Ch. rufa squalida* (Ukraine: Carpathians), 9 – *Ch. rufa biharica* (Hungary), 10 – *Ch. staphylaea lederi* (Armenia), 11 – *Ch. blanchei*

(Lebanon); 12 – *Ch. staphylaea staphylaea* (*Ch. staphylaea arthritica*, syntype, Faroe Isl.), aedeagus, dorsal and lateral view. (Orig.)



Chrysolina **s.str. figures 13–20:** 13–16 – maxillary palpus: 13 – *Ch. rufa biharica* ♀ (Hungary: Bihar), 14 – *Ch. rufa biharica* ♂ (Hungary: Bihar), 15 – *Ch. rufa squalida* ♂ (Ukraine: Carpathians), 16 – *Ch. blanchei* (Lebanon: Beirut); 17–19 – puncturation of elytron: 17 – *Ch. staphylaea daurica* (Amur reg.), 18 – *Ch. staphylaea staphylaea* (Moscow reg.), 19 – *Ch. staphylaea lederi* (Armenia); 20 – *Ch. rufa biharica* ♂ (lectotype, Hungary: Bihar), aedeagus, dorsal and lateral view. (Orig.)

Subgenus *Chrysolinopsis* Bechyné, 1950a

Diagnosis

Dorsum unicolorous, dark metallic: coppery, bronze, with greenish reflection or without it.

Last maxillary palpomere slightly broader than penultimate one in male, it is as broad as penultimate one in female.

Antenna inserted at almost equal distance between clypeus and eye (slightly closer to clypeus than to eye), narrow, with elongate apical antennomeres.

Pronotum broadest basally, with lateral sides straight in basal ⅔, swollen laterally along entire length, with lateral impression obsolete to absent. Pronotal disc minutely obsoletely punctate. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore present.

Prothoracic hypomeron weakly convex, without outer border. Basal fold strong. Intercoxal prosternal process convex, it is impressed only apically.

Metasternum with anterior process narrowly immarginated and slightly elevated above the level of mesosternum between middle coxae.

Elytron with obsolete humeral callus. Elytral puncturation moderately large, forming regular rows (9 entire rows + 1 abbreviated sutural row) of very sparse punctures. Over-epipleural row consists of fine punctures, it is double anteriorly.

Elytral epipleura horizontal basally, inclined inside apically, invisible along entire length in lateral view, ciliate near apex.

Hind wings present, but some reduced, reaching apex of pygidium.

Tarsomeres 1–3 with entire sole; similar in both sexes. Tarsomere 1 slightly narrower than the apex of the respective tibia. Claw tarsomere without denticles beneath.

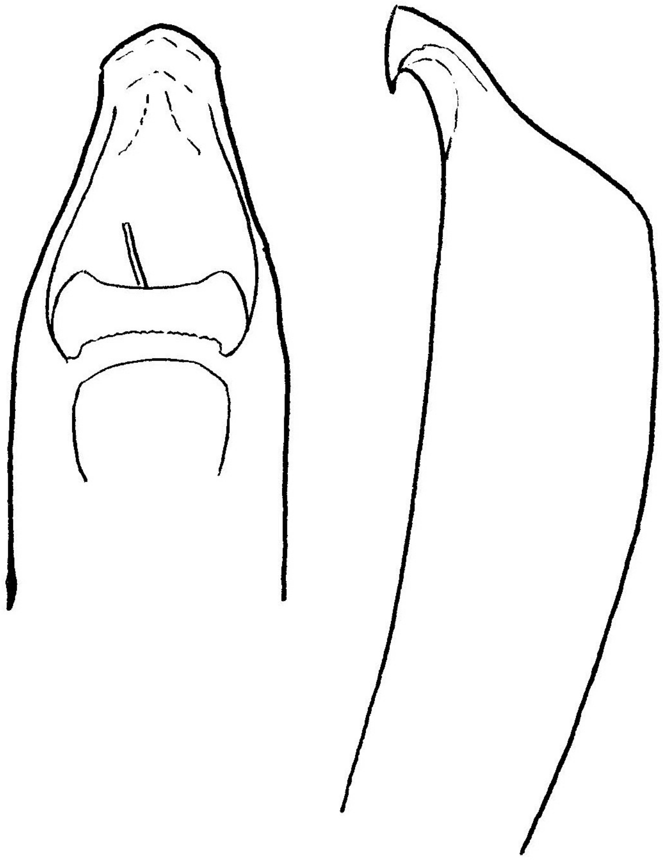
Pygidium with weak longitudinal impression along entire length except near apex.

Last abdominal sternite evenly weakly convex, with apical margin broadly truncate.

Aedeagus (Fig. 1) narrow, almost cylindrical, slightly evenly curved, with apex narrowly drawn out, curved ventrally and bearing 2 apical denticles, with flagellum narrow, simple, slightly exposed (figure of aedeagus of *Ch. gemina* in Warchałowski (2003, 2010) is incorrect).

Differential diagnosis

The single species of this subgenus, namely *Ch. gemina* (Brullé, 1838), an endemic species of Canary Isls. and Madeira Isl., can be easily separated from any other *Chrysolina* by the combination of the following characters: body dark metallic, pronotum without distinct lateral impressions or furrows and without large punctures laterally, elytra with obsolete humeral calli, with 9 regular paired rows of very sparse punctures (10–12 in 4th or 5th row), elytral epipleura invisible laterally along entire length, aedeagus with apical denticles. Aedeagus – fig. 1.



Chrysolinopsis **figure 1:** *Chrysolina gemina* (Canary Isls.: Tenerife Isl.), aedeagus, dorsal and lateral view. (Orig.)

Subgenus *Chrysomorpha* Motschulsky, 1860a

Diagnosis

Dorsum metallic: usually bicolorous or tricolorous, with longitudinal stripes on pronotum and elytra, or unicolorous (see "Taxonomical remarks" below).

Last maxillary palpomere oval, elongate, obliquely truncate, as broad as penultimate one, similar in both sexes.

Antenna inserted much closer to clypeus than to eye, narrow, with 6 apical antennomeres very slightly broadened.

Pronotum usually broadest basally, rarely – before base or near mid-length, with lateral sides weakly to moderately rounded. Lateral impression developed in basal ⅓–½, moderate to deep, covered with large, partly coalescent punctures and uneven wrinkled intervals. Pronotal disc finely densely punctate. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore present.

Prothoracic hypomeron weakly convex, with impression covered by transverse wrinkles laterally. Basal fold strong. Intercoxal prosternal process with impression covered with wrinkles along entire length.

Metasternum with anterior process marginated.

Elytron with weak to obsolete humeral callus. Elytral puncturation moderately large, mostly irregular, with puncture rows hardly visible among irregular punctures. Punctures forming regular rows (9 entire rows + 1 abbreviated sutural row) of dense punctures.

Elytral epipleura inclined outside and visible along entire length in lateral view, ciliate near apex.

Hind wings normally developed.

Tarsomeres 1–3 with entire sole; narrow in female, slightly broadened in male. Fore-tarsomere 1 slightly narrower than the apex of fore-tibia in female, it is as broad as the apex of the respective tibia in male. Claw tarsomere without denticles beneath.

Pygidium with longitudinal impression in basal ½.

Last abdominal sternite evenly weakly convex, with apical margin bisinuate in male, broadly truncate in female.

Aedeagus narrow, slightly depressed, strongly curved in apical ½, narrowed at sides of apical opening, with apex truncate, with flagellum moderately narrow, simple, not exposed.

Differential diagnosis

The subgenus *Chrysomorpha* is morphologically close to the subgenus *Anopachys*. It differs from the latter in: 1) male aedeagus strongly curved in apical ½, always without apical denticles, 2) female last abdominal sternite evenly convex, not turned down apically. The single member of the subgenus *Chrysomorpha*, namely *Ch. cerealis* (Linnaeus, 1767), usually bears colored longitudinal stripes on pronotum and elytra (only subspecies *Ch. cerealis mixta* and *Ch. cerealis livonica* are mostly unicolorous dorsally), while W Palaearctic members of *Anopachys* are always without colored stripes. Only E Palaearctic wingless members of *Anopachys* bears colored stripes on elytra, while *Ch.* (*Chrysomorpha) cerealis* always has normally developed hind wings.

Taxonomical remarks

I examined 583 specimens from all over the range of *Ch. cerealis* and found that this species includes 5 geographical subspecies.

Terminology used to describe the color of elytron is given below. Elytral intervals are numbered as follows: sutural (without number), 1+2 (combined together), 3, 4, 5, 6, 7, 8+9 (combined together) (Fig. 6). Coloration of elytral intervals: B – black, C – coppery, G – green, Gl – golden, (Gl)G – golden, margined with green, P – purple, R – red, (R)G – red, margined with green, V – violet.

(a) subsp. *cerealis*(Linnaeus, 1767) (Figs. 1, 5). Spain, Pyrenees. Body is more convex, than in the subspecies *Ch. cerealis megerlei*, body length / elytral height = 2.3–2.9. The prevalent colorations of elytral intervals are bright and contrasty: 1+2: (R)G, 3: V, 4: (R)G, 5: V, 6: (Gl)G, 7: V, 8+9: (R)G. Interval 6 distinct, presents both in anterior and in posterior parts of elytron. This subspecies includes ab. *fulgens* in which elytron mostly red with suture and epipleura green, sometimes with intervals 1+2: Gl or P, 4: Gl or P, interval 6 indistinct. Length 6.4–9.2 mm.

It was originally described from "Europae australis". The insect collection by C. Linnaeus (Linnean Society of London) has three specimens of *Ch. cerealis*, which can be considered to be syntypes. All of them devoid of geographical labels. Two specimens (N 5568, 5569) represent the subspecies distributed mostly in Spain and Pyrenees, the third one (N 5567) is morphologically close to the two above-mentioned specimens, but some less convex.

Syntypes of *Chrysomorpha kiesenwetteri* being at my disposal belong to *Ch. cerealis cerealis* ab. *fulgens*.

(b) subsp. *megerlei* (Fabricius, 1801) (Fig. 4). Body is less convex, than in *Ch. cerealis cerealis*, body length / elytral height = 2.9–3.2. The prevalent colorations of elytral intervals are variable and contrasty: a) 1+2: (R)Gl, 3: V, 4: (R)Gl, 5: V, 6: (R)Gl, 7: V, 8+9: (R)Gl; b) 1+2: P, 3: V, 4: P, 5: V, 6: P, 7: V, 8+9: P; c) 1+2: G, 3: V, 4: G, 5: V, 6: G, 7: V, 8+9: G. Interval 6 distinct, presents both in anterior and in posterior parts of elytron. Length 5.3–8.7 mm.

This subspecies inhabits the most part of Europe, Asia Minor, Caucasus, Kazakhstan, W Siberia.

The name *Chrysomela megerlei* is the oldest available name for this subspecies. *Chrysomorpha rufolineata* was described from Ukraine (Kharkov) according to the original description (Motschulsky, 1860a) and by the label of one of the syntypes. Subspecies *Ch. cerealis rufolineata* is usually considered to distribute in S European Russia, Caucasus, and Ukraine (Bechyné, 1948b; Kippenberg, 2010). Warchałowski (1993, 2003) erroneously cited the basin of Amur river as the type locality. The available specimens from the most part of the European Russia, Ukraine, and the Caucasus do not differ from those from central part of W Europe. Two syntypes of *Chrysomorpha rufolineata* being at my disposal represent immature specimens, in which metallic coloration does not fully developed: a) 1+2: G, 3: testaceous, 4: G, 5: testaceous, 6: G or greenish testaceous, 7: greenish testaceous, 8+9: Gl or golden testaceous. It was probably named "*rufolineata*" because of these testaceous stripes on elytra. Motschulsky (1860a) wrote: "les bandes dorées moins distinctes, plus roussâtres".

(c) subsp. *mixta* (Küster, 1844). Body is less convex than in *Ch. cerealis cerealis*, body length / elytral height = 2.7–3.4. The prevalent colorations of elytral intervals are some variable, not contrasty: a) 1+2: V, 3: B, 4: V, 5: B, 6: V, 7: B, 8+9: V; b) (1+2, 3, 4, 5, 6, 7, 8+9): V; c) 1+2: P, 3: V, 4: P, 5: V, 6: P, 7: V, 8+9: P. Interval 6 indistinct or absent. Length 5.5–10.0 mm.

According to Küster (1844), *Chrysomela mixta* was originally described from S and Middle France. Winkelman, Debreuil (2008) recorded this subspecies only from S-E France. I have examined the specimens of this subspecies from S France ("Gallia"), S Austria (Tirol), Italy, Bosnia and Herzegovina, Croatia, Montenegro, Macedonia, and W Bulgaria.

Chrysolina cerealis plorans was originally described from Czechia (type locality: Moravia). According to the original description, this subspecies is distributed in Slovakia and Croatia too. Having examined the original description (Bechyné, 1948b) and the type specimen, I found not differences between the subspecies *mixta* and *plorans*.

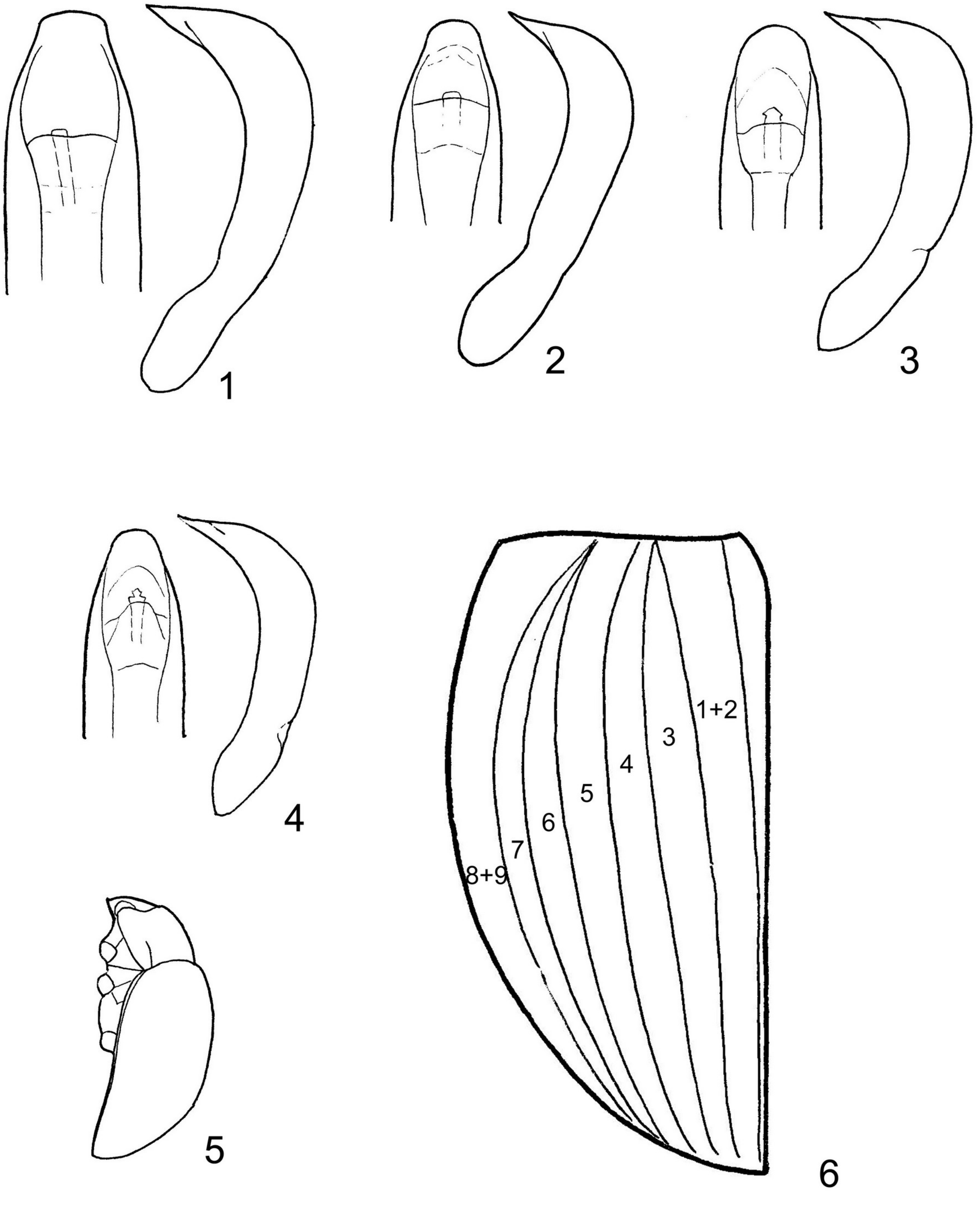
(d) subsp. *livonica* (Motschulsky, 1860a) (Fig. 2). Body convex, body length / elytral height = 2.6–2.8. The prevalent coloration of elytral intervals is: (1+2, 3, 4, 5, 6, 7, 8+9): V. Interval 6 indistinct or absent. Length 6.5–7.8 mm.

This subspecies inhabits mostly Baltic countries and is morphologically close to S European *Ch. cerealis mixta*, but smaller.

The type locality of *Chrysomorpha livonica* was not indicated in the original description (Motschulsky, 1860a), however, the syntypes are labeled: "Livonia". Therefore, Latvia and Estonia are the type locality (ICZN, 1999, 76A.1.1).

(e) subsp. *cyaneoaurata* (Motschulsky, 1860a) (Fig. 3). Body is less convex than in *Ch. cerealis cerealis*, body length / elytral height = 2.9–3.6. The prevalent colorations of elytral intervals are some variable and consist of green and violet: a) 1+2: G, 3: V, 4: G, 5: V, 6: V, 7: V, 8+9: G; b) 1+2: Gl(G), 3: V, 4: (Gl)G, 5: V, 6: G, 7: V, 8+9: (Gl)G. Interval 6 absent, or present in posterior part only. Length 6.2–8.4 mm.

This subspecies inhabits E Siberia (south of Krasnojarsk Krai, Tuva, Irkurtsk reg.) and Mongolia. One syntype of *Chrysomorpha cyaneoaurata* has two labels: "Mongolia" and "*Chrysomorpha cyaneo-aurata* Motsch. Kamtschatka". The former label corresponds to the type locality in the original description (Motschulsky, 1860a), but the locality on the latter label is evidently incorrect.



***Chrysomorpha* figures 1–6:** 1–4 – aedeagus, dorsal and lateral view: 1 – *Chrysolina cerealis cerealis* (syntype *Chrysomorpha kiesenwetteri*, E Pyrenees), 2 – *Ch. cerealis livonica* (syntype *Chrysomorpha livonica*, "Livonia"), 3 – *Ch. cerealis cyaneoaurata* (syntype *Chrysomorpha cyaneoaurata*, Mongolia), 4 – *Ch. cerealis megerlei* (syntype *Chrysomorpha rufolineata*, Ukraine); 5 – syntype *Ch. cerealis cerealis*, total lateral view (after photo of the specimen LINN 5569 *Chrysomela cerealis* (Ins Linn), studied by permission of the Linnean Society of London); 6 – numbering of the elytral intervals in *Ch. cerealis.* (Orig.)

Subgenus *Colaphodes* Motschulsky, 1860a

Diagnosis

Dorsum shining, unicolorous, dark metallic: usually dark blue, rarely violet, or black.

Last maxillary palpomere elongate, obliquely truncate, as broad as penultimate one, similar in both sexes.

Antenna inserted at equal distance between clypeus and eye, narrow, short, with apical antennomeres slightly broadened.

Pronotum broadest basally, with lateral sides rectilinearly convergent in the forward direction, swollen laterally along entire length, with lateral impression obsolete (in this case, it is visible basally only) or entirely absent. Pronotal disc finely densely distinctly punctate. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore absent.

Prothoracic hypomeron weakly convex, without outer border. Basal fold strong. Intercoxal prosternal process depressed, with shallow impression (Fig. 2).

Metasternum with anterior process entirely marginated between middle coxae.

Elytron with obsolete humeral callus. Elytral puncturation moderately large, mostly irregular, with undulate, paired rows which hardly visible among irregular puncturation. Over-epipleural row regular, consists of moderately large punctures.

Elytral epipleura inclined outside along entire length in lateral view, ciliate near apex.

Hind wings normally developed.

Tarsomeres 1–3 with entire sole; slightly broader in male than in female. Tarsomere 1 as wide as the apex of the respective tibia in male, it is slightly narrower than the apex of the respective tibia in female. Claw tarsomere without distinct denticles beneath, however apical margin slightly angularly projected under each claw.

Pygidium with deep, broad longitudinal impression along entire length except near apex.

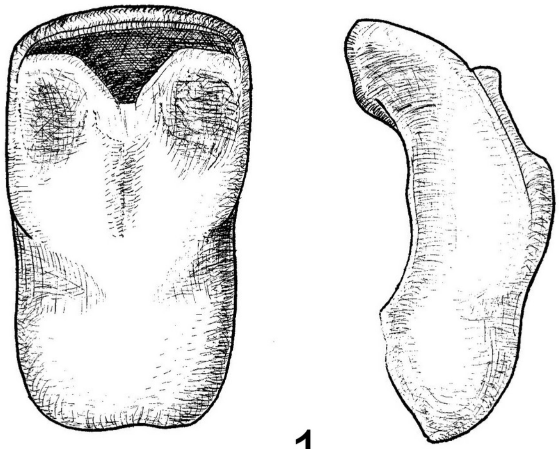
Last abdominal sternite similar in both sexes, evenly weakly convex, with apical margin broadly truncate and distinctly marginated (deep furrow placed along apical margin).

Aedeagus broad, very short, flattened; with flagellum invisible (Fig. 1).

Differential diagnosis

The single species of this subgenus, namely *Ch. haemoptera* (Linnaeus, 1758) (Figs. 1, 2) can be easily separated from any other *Chrysolina* by the combination of the following characters: dorsum entirely dark metallic or black, unicolorous, pronotum without distinct lateral impressions or furrows, with straight lateral sides, strongly narrowed forward, elytra with punctures partly arranged in rows, which hardly visible among irregular puncturation, hind wings normally developed, pygidium with strong longitudinal furrow along almost entire length, tarsomeres 1–3 with entire sole in both sexes, male fore-tarsomeres 1–3 moderately broadened, aedeagus very short, broad, depressed, truncate apically.

Ch. (*Colaphoptera*) *bigorrensis* from Pyrenees is quite similar externally to *Ch.* (*Colaphodes*) *haemoptera* and differs from the latter in hind wings absents and aedeagus narrow, long, bearing 2 apical denticles ventrally, with flagellum exposed.



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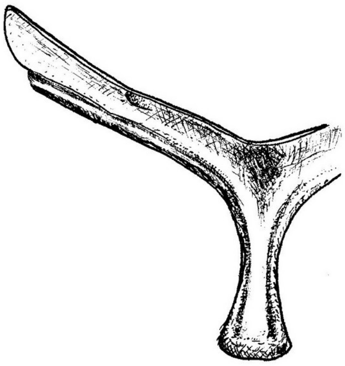

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***Colaphodes* figures 1–2:** *Ch. haemoptera haemoptera*: 1 – aedeagus, male, dorsal and lateral view (Germany: Brandenburg), 2 – prosternum, female (Ukraine). (Orig.)

Subgenus *Colaphoptera* Motschulsky, 1860a

Diagnosis

Dorsum mostly unicolorous, rufous, brown or black with metallic reflection (bronze, coppery, blue, green, violet), rarely metallic tint differs on head+pronotum and elytra.

Last maxillary palpomere similar in both sexes, or slightly broader in male than in female. It is nearly oval or elongate, slightly broader than penultimate one, or as broad as the latter.

Antenna inserted closer to clypeus than to eye, narrow.

Pronotum broadest basally or before base, swollen laterally along entire length, with lateral impression distinct to obsolete. Pronotal disc finely punctate. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore absent.

Prothoracic hypomeron weakly convex to almost flat, laterally with wrinkles or without them; without outer border. Basal fold shallow to moderately deep. Intercoxal prosternal process medially impressed, with elevated lateral borders along entire length, or convex and only apically impressed.

Metasternum entirely marginated anteriorly.

Elytron without humeral callus. Elytral puncturation double (large and fine punctures), dense, mostly irregular. Large punctures partly forming rows.

Elytral epipleura inclined outside, visible along entire length in lateral view, ciliate near apex.

Hind wings very reduced, shorter than metathorax, or absent.

Tarsomeres 1–3 with entire sole; in male slightly broader than in female. Claw tarsomere without denticles beneath.

Pygidium with weak longitudinal impression in basal ½ or along entire length.

Last abdominal sternite evenly convex, with apical margin broadly truncate or very shallowly broadly emarginated.

Aedeagus: there are three general structural plans: 1) narrow, long, with apex more or less drawn out, and apical denticles projecting beyond lateral sides (in *Ch. apsilaena, Ch. planicollis, Ch. rosti, Ch. purpurascens*), 2) narrow, some shorter than in previous group, with apex trapezoidal, and apical denticles placed close to each other, directed downward and invisible from dorsal side (in *Ch. pliginskii, Ch. globosa, Ch. bigorrensis*), 3) broad, flattened, with apex broadly truncate, without apical denticles (in *Ch. caspica*). Flagellum narrow, simple, exposed.

Differential diagnosis

Colaphoptera is morphologically close to the subgenera *Chrysolina* s.str., *Sphaerochrysolina*, *Cyrtochrysolina, Lopatinica*, and *Timarchida*. It differs from *Chrysolina* s.str. in male last maxillary palpomere narrow and in hind wings strongly reduced in all species. It differs from *Cyrtochrysolina* in tarsomeres 1–3 narrow in both sexes (in male only slightly broadened). The most *Colaphoptera* members (with exception of *Ch. caspica* only) differ from *Sphaerochrysolina, Lopatinica*, and *Timarchida* in the aedeagus bearing apical denticles on ventral side. *Ch.* (*Colaphoptera*) *caspica* differs from *Sphaerochrysolina, Lopatinica*, and *Timarchida* in the pronotum bearing lateral impressions.

Ch. (*Colaphoptera*) *bigorrensis* from Pyrenees is quite similar externally to *Ch.* (*Colaphodes*) *haemoptera* and differs from the latter in hind wings absents and aedeagus narrow, long, bearing 2 apical denticles ventrally, with flagellum exposed.

Key to species (all subspecies of *Ch. purpurascens* and *Ch. globosa* were recently revised by Kippenberg, 2017)

1(14) Pronotum with distinct lateral impression modified into deep furrows basally. There are 5 species, which can be easily separated from each other by the aedeagus structure.

2(7) Species from Europe, to Ukraine (E Carpathians), Bulgaria, and Greece eastward. Pronotal lateral callus more or less broadened on inner side. In male, last maxillary palpomere broader than penultimate one. Dorsum with coppery, violet, bronze, blue, or green reflection. Length 6.0–8.1 mm. Figs. 1–4, 12, 23, 24, 27, 28. It includes 11 valid subspecies.
Ch. purpurascens (Germar, 1822)

7(2) Species from the Caucasus and Crimea.

8(9) Species from Crimea. Pronotum rounded laterally. Dorsum with purple, violet or blue reflection. In male, last maxillary palpomere with almost parallel lateral sides, as broad as penultimate one. Length 5.9–7.0 mm. Figs. 9, 13, 26.
Ch. pliginskii (Reitter, 1913b)

9(8) Species from the Caucasus, very similar externally.

10(13) Pronotal lateral callus separated from disc by furrow basally and by shallow impression in anterior ½ (Fig. 22).

11(12) Aedeagus short and broad, without apical denticles (Figs. 7, 8). Antennae rufous or dark. Body smaller and more stumpy (broader and shorter), than in *Ch. apsilaena*. Dorsum coppery, bronze-green, or violet. Length 4.5–6.6 mm. Fig. 22. Caucasus.
Ch. caspica (Weise, 1892b)

12(11) Aedeagus long and narrow, looks like that of *Ch. purpurascens crassimargo*, but more strongly curved (Fig. 10). Dorsum rufous with purple reflection or without metallic reflection. Length 5.9–6.9 mm. Caucasus.

Ch. rosti (Weise, 1892b)

13(10) Pronotal lateral callus separated from disc by furrow basally, by shallow curved impression near mid-length, and by shallower impression near anterior margin (Fig. 25). Body larger, more convex, and more elongate, than in *Ch. caspica*. Dorsum coppery-violet, antennae blackish piceous. Length 6.3–7.9 mm. Fig. 11. Caucasus.

Ch. apsilaena Silfverberg, 1977

14(1) Pronotum without deep lateral impression (only very shallow and short impression presents at pronotal base in some cases). There are 3 species strictly allopatric.

15(16,17) Species from C and S-E Europe. Pronotal lateral sides slightly rounded or almost straight. Elytra finely to moderately largely punctate. In male, last maxillary palpomere slightly broader than penultimate one, slightly broader than the last palpomere in female. Apex of aedeagus trapezoidal in dorsal view, with apical denticles closely placed to each other and directed downward (Fig. 6). Dorsum dark metallic: bronze, violet, or brown with bronze reflection. Length 5.4–8.3 mm. It includes five valid subspecies.

Ch. globosa (Panzer, 1805)

16(15,17) Species from N-E Asia Minor (record from Syria (Breit, 1919) should be confirmed). Pronotal lateral sides slightly rounded. Elytra finely punctate. Last maxillary palpomere as broad as penultimate one, similar in both sexes. Apex of aedeagus trapezoidal in dorsal view, with apical denticles projecting beyond lateral sides. Dorsum dark metallic: bluish purple, green, violet, blackish blue, or bicolor: 1) head and pronotum dark green, elytra blackish violet, 2) head and pronotum dark bronze, elytra green. Length 5.7–7.0 mm. Figs. 14–21, 29.

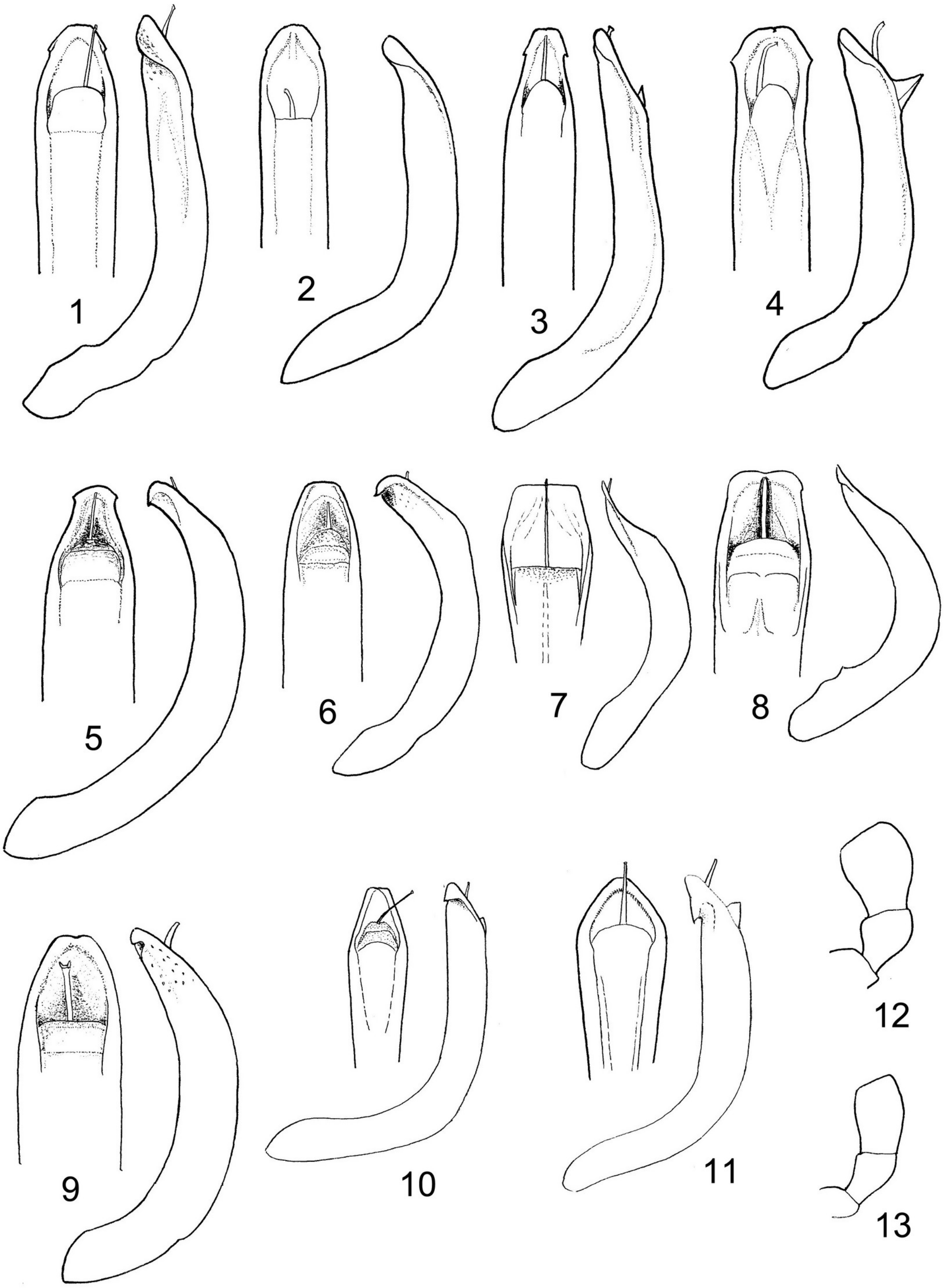
Ch. planicollis(Breit, 1919)

17(15,16) Species from Pyrenees. Pronotal lateral sides straight and slightly rounded only near anterior angles. Elytra moderately to largely punctate. In male, last maxillary palpomere slightly broader than penultimate one, slightly broader than the last palpomere in female. Apex of aedeagus trapezoidal in dorsal view, with apical denticles slightly projecting laterally (Fig. 5). Dorsum black, with or without bluish reflection. Length 5.7–6.1 mm (♂), 6.8 mm (♀).

Ch. bigorrensis (Fairmaire, 1865)

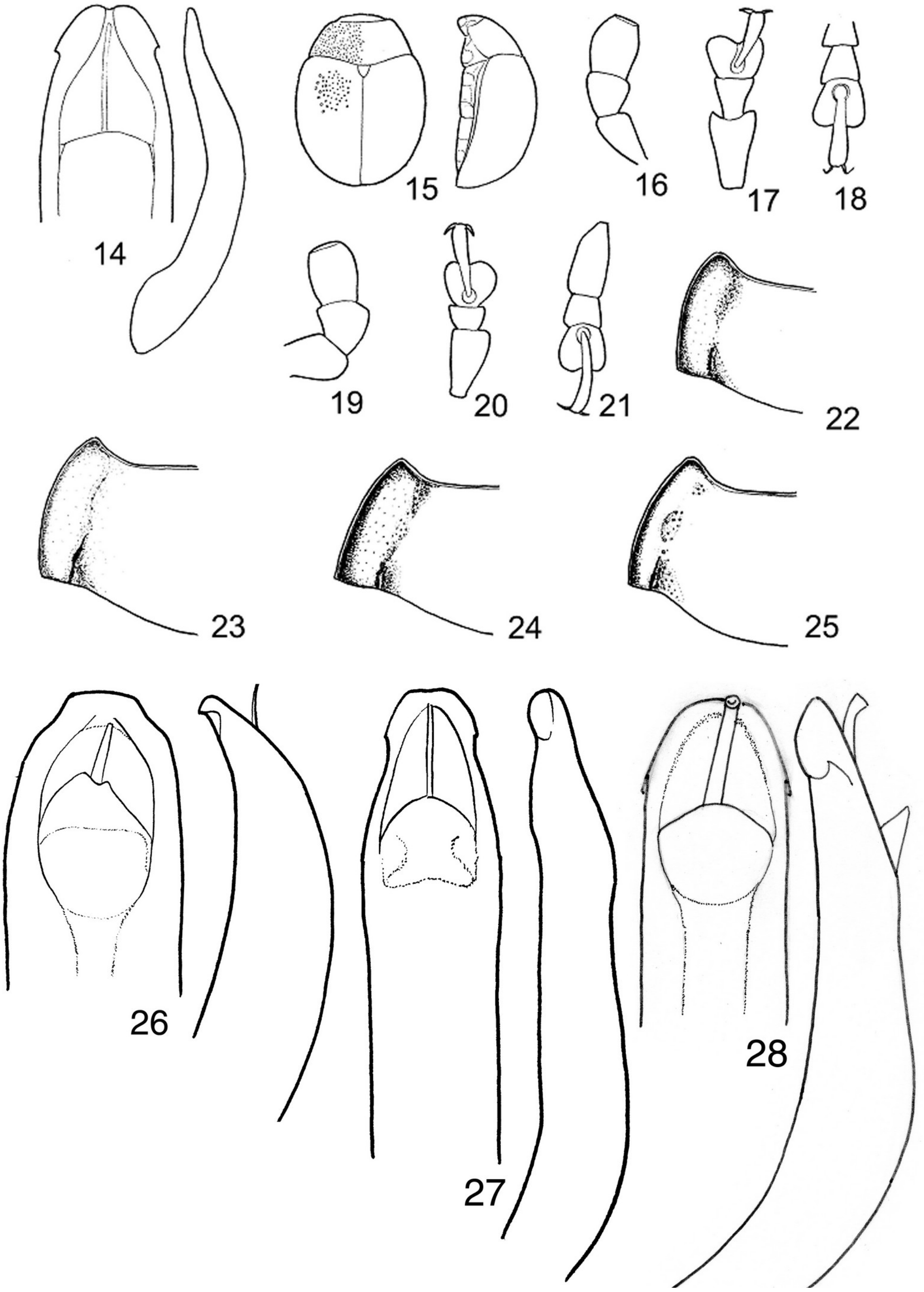
Biological notes

During dissection of some females of *Ch. apsilaena, Ch. rosti, Ch. purpurascens purpurascens*, and *Ch. purpurascens crassimargo*, I found within them the eggs containing the larvae with fully formed head, ocelli, mandibles, legs, and body setation. This indicates ovoviviparity in the species in question.

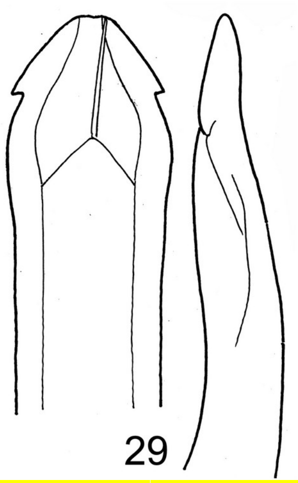


Colaphoptera figures 1–13: 1–11 – aedeagus, dorsal and lateral view: 1 – *Chrysolina purpurascens purpurascens* (Saxonia), 2 – *Ch. purpurascens crassimargo* (Slovenia), 3 – *Ch. purpurascens,* intermediate form between subsp. *crassimargo* and *rufocuprea* (Slovenia),4 – *Ch. purpurascens notiophila* (Bulgaria), 5 – *Ch. bigorrensis* (Pyrenees), 6 – *Ch. globosa* (Austria), 7 – *Ch.*

caspica (N Caucasus: Lagonaki Plateau), 8 – *Ch. caspica* (syntype, "Caucasus, Tbatani"), 9 – *Ch. pliginskii* (Crimea), 10 – *Ch. rosti* (N Caucasus: Achishcho Mt.), 11 – *Ch. apsilaena* (N Caucasus: Dagomys); 12–13 – male maxillary palpus: 12 – *Ch. purpurascens crassimargo* (Slovenia), 13 – *Ch. pliginskii* (Crimea). (Orig.)



***Colaphoptera* figures 14–28:** 14–21 – *Chrysolina planicollis* (N-E Turkey): 14 – aedeagus, dorsal and lateral view, 15 – general view, 16 – male maxillary palpus, 17 – male fore-tarsus, 18 – male hind-tarsus, 19 – female maxillary palpus, 20 – female fore-tarsus, 21 – female hind-tarsus; 22–25 – pronotum: 22 – *Ch. caspica* (N Caucasus: Gelendzhik), 23 – *Ch. purpurascens purpurascens* (Saxonia), 24 – *Ch. purpurascens crassimargo* (Slovenia), 25 – *Ch. apsilaena* (N Caucasus: Dagomys), 26–28 – aedeagus, dorsal and lateral view: 26 – *Ch. pliginskii* (syntype *Ch. taurica*, Crimea), 27 – *Ch. purpurascens purpurascens* (syntype *Ch. crassimargo ominosa*, Czechia), 28 – *Ch. purpurascens cartolarii* (paratype, N Italy). (Orig.)



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Colaphoptera figure 29: *Chrysolina planicollis* (syntype, N-E Turkey: Kolat-Dag Mts.), aedeagus, dorsal and lateral view. (Orig.)

Subgenus *Colaphosoma* Motschulsky, 1860a

Diagnosis

Dorsum unicolorous, dark metallic (violet, bronze, or green), with tarsi rufous or light brown.

Last maxillary palpomere short, as wide as penultimate one, in male slightly broader than in female.

Antenna inserted closer to clypeus than to eye; narrow, long, reaching hind-coxa.

Pronotum broadest basally or before base, with rounded lateral sides, swollen laterally along entire length, without distinct lateral impression. Pronotal disc finely punctate. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore absent.

Prothoracic hypomeron convex, laterally with impression filled by wrinkles; with high outer border along entire length. Basal fold strong. Intercoxal prosternal process medially impressed, with elevated lateral borders along entire length.

Metasternum entirely marginated anteriorly.

Elytron with weak humeral callus. Elytral puncturation double (large and fine punctures), dense, irregular.

Elytral epipleura inclined outside, visible along entire length in lateral view.

Hind wings normally developed.

Tarsomeres 1–3 with entire sole; in male they very broad, tarsomere 1 broader than the apex of respective tibia, in females they much narrower than in male, with tarsomere 1 as broad as apex of the respective tibia (Figs. 2, 3). Claw tarsomere without denticles beneath.

Pygidium with strong furrow along entire length.

Last abdominal sternite similar in both sexes, evenly weakly convex, with apical margin broadly truncate in male, rounded in female.

Aedeagus narrow, oval in cross-section, moderately evenly curved, with apex forming rounded obtuse angle, with very small apical denticles, with flagellum narrow, simple, slightly exposed (Fig. 1).

Differential diagnosis

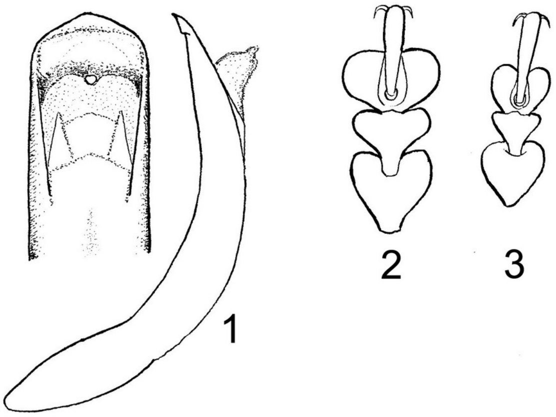
Colaphosoma has a very distinctive appearance because of combination of the following characters: body is dark metallic (including femora and tibiae) with rufous tarsi, which are very broadened in male, elytral puncturation is fine, confused, pronotum is rounded laterally, without distinct lateral impressions. *Ch.* (*Colaphosoma*) *sturmi* looks like *Ch.* (*Crositops*) *roddi* (especially, the subspecies inhabiting European Russia, Lipetsk reg.), *Ch.* (*Chrysocrosita*) *nikolskyi* and differs from them in rufous tarsi, prothoracic hypomeron with strong outer border, and developed hind wings. *Ch.* (*Colaphosoma*) *sturmi* differs from *Ch.* (*Ovostoma*) *olivieri globipennis* in rufous tarsi, which are very broad in male, narrower last maxillary palpomere, and developed hind wings.

This subgenus includes one species, *Ch. sturmi* (Westhoff, 1882) with two subspecies.

Key to subspecies of *Ch. sturmi*

1(2) Body entirely dark bronze (ab. *sturmi*), or entirely violet ventrally, and violet dorsally with more or less distinct bronze coloration on elytra and pronotum (intermediate form between ab. *sturmi* and ab. *diversipes*), or entirely violet (ab. *diversipes*). Europe (mostly with exception of Ukraine), Siberia, Kazakhstan. Length 6.7–6.9 mm (♂), 8.7–9.6 mm (♀).
Ch. sturmi sturmi (Westhoff, 1882)

2(1) Body entirely bluish green or golden green. Ukraine (Podolsk and Pridneprovskaya uplands). It does not differ in size from nominotypical subspecies.
Ch. sturmi polonica (Weise, 1884a)



***Colaphosoma* figures 1–3:** *Chrysolina sturmi sturmi*: 1 – male aedeagus (European Russia: Kursk reg.), dorsal and lateral view, 2 – male fore-tarsus (Ukraine), 3 – female fore-tarsus (European Russia: Lipetsk reg.). (Orig.)

Subgenus *Crositops* Marseul, 1883

Diagnosis

Dorsum dark metallic, with head and pronotum bronze or greenish bronze and elytra violet, or head and pronotum violet and elytra bluish green, or dorsum unicolorous, violet, dark blue, greenish bronze, or black with metallic reflection; legs dark metallic.

Last maxillary palpomere short, as broad as penultimate one or slightly broader than the latter.

Antenna inserted closer to clypeus than to eye; narrow, long, reaching hind-coxa.

Pronotum broadest before base or at middle of its length, with rounded lateral sides, swollen laterally along entire length, with shallow to obsolete lateral impression, deepened basally. Pronotal disc densely finely punctate. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore absent.

Prothoracic hypomeron weakly convex, laterally with impression filled by wrinkles; without distinct outer border. Basal fold moderate to deep. Intercoxal prosternal process medially impressed, with elevated lateral borders along entire length.

Metasternum entirely marginated anteriorly.

Elytron without humeral callus. Elytral puncturation double (large and fine punctures), dense, entirely irregular or mostly irregular with rare traces of puncture rows.

Elytral epipleura inclined outside, visible along entire length in lateral view, ciliate apically.

Hind wings absent.

Tarsi: male: tarsomeres 1–3 with entire sole, tarsomeres 1–3 in fore- and mid-tarsi, and tarsomere 1 in hind-tarsi broadened; female: tarsomeres 1–3 narrow, tarsomere 1 with broad glabrous stripe or with entire sole beneath. Claw tarsomere without denticles beneath.

Pygidium with shallow longitudinal impression, narrowing towards the apex and not reaching the latter or with deep longitudinal impression, almost reaching the apex.

Last abdominal sternite convex, with apical margin emarginated apically in male, or with rounded apical margin in female.

Aedeagus broad, curved, flattened, with apical lobe of different shape, with flagellum narrow, simple, slightly exposed.

Differential diagnosis

Members of the subgenus *Crositops*, especially *Ch. roddi* and *Ch. kabaki*, look like *Ch.* (*Colaphosoma*) *sturmi* and *Ch.* (*Ovostoma*) *olivieri* and differ from the former in legs entirely metallic, and hind wings absent, and from the latter in narrower last maxillary palpomere in male, broader 1–3 tarsomeres of male, and in the absence of outer border of prothoracic hypomeron.

Key to species and subspecies

1(2) Pygidium with shallow longitudinal impression, narrowing towards the apex and not reaching the latter. In male, apical lobe of aedeagus is some longer (Fig. 5). In female, 1st tarsomere of all tarsi with broad glabrous stripe beneath (Fig. 22). Dorsum shining; head and pronotum usually bronze or greenish bronze and elytra violet, rarely head and pronotum violet and elytra bluish green, or dorsum unicolorous, violet, never unicolorous dark blue. Length 7.8–10.4 mm (♂), 9.0–12.4 mm (♀). Figs. 4, 10, 22. E Kazakhstan, W Siberia.
Ch. pedestris (Gebler, 1823)

2(1) Pygidium with deep longitudinal impression, almost reaching the apex. In male, apical lobe of aedeagus is shorter. In female, 1st tarsomere of all tarsi without broad glabrous stripe, with very narrow glabrous stripe or entirely covered with setae beneath (Fig. 23). Dorsum dark blue, greenish bronze, or black, never violet.

3(4) Apical lobe of aedeagus longer and narrower than in the following species (Figs. 8, 9). Dorsum dark blue or greenish bronze. Length 7.7–9.2 mm (♂), 9.3–10.8 mm (♀). Fig. 13, 18–21, 24. E Kazakhstan, Altai.
Ch. kabaki Lopatin, 1988

4(3) Apical lobe of aedeagus shorter and broader than in the previous species (Figs. 6, 7).
Ch. roddi

5(6) Dorsum dull, dark greenish bronze or black with weak metallic reflection. Pronotal lateral impression visible along entire length; this impression is shallow anteriorly and moderately deep posteriorly, filled with numerous large punctures, which some larger than those on disc (Figs. 3, 4). C and S Urals, Samara reg. (Zhiguli Mts.). Length 7.6–9.5 mm (♂), 9.4–11.0 mm (♀). Figs. 12, 14, 15, 25.
Ch. roddi roddi (Jacobson, 1897)

6(5) Dorsum moderately shining, dark blue. Pronotal lateral impression very shallow, obsolete and filled with several large punctures basally, and completely absent in anterior ¾ (Figs. 1, 2). European Russia: Lipetsk reg.: Galichia Gora. Length 7.4–8.2 mm (♂), 8.8–9.1 mm (♀). Figs. 11, 16, 17, 23.

Ch. roddi misha **subsp. nov.**

Ch. roddi misha **subsp. nov.** Male (holotype). This subspecies shares the most characters of the nominotypical subspecies: last maxillary palpomere slightly broader than penultimate, as broad as long; antenna inserted closer to clypeus than to eye; pronotal disc covered with dense fine punctures, prosternal process with longitudinal impression, prothoracic hypomeron slightly convex, with weak impression laterally, metasternum entirely marginated anteriorly, elytra with obsolete humeral calli, densely, irregularly covered with moderately large and fine punctures, elytral epipleura inclined outside, covered with setae apically, hind wings absent, pygidium with distinct longitudinal furrow; tarsomeres 1–3 in fore- and mid-tarsi, and tarsomere 1 in hind-tarsi broadened, tarsomeres 1–3 entirely covered with setae beneath; tarsomere 4 without denticles; last abdominal sternite convex, semicircularly emarginate apically. Aedeagus as in nominotypical subspecies: flattened, curved, with short and broad apical lamella and slightly projecting simple flagellum.

Female (paratype). Last maxillary palpomere slightly narrower than in male, as wide and as long as penultimate palpomere. Tarsomeres 1–3 in fore- and mid-tarsi, and tarsomere 1 in hind-tarsi narrow, tarsomeres 1–3 entirely covered with setae beneath. Last abdominal sternite convex, rounded apically.

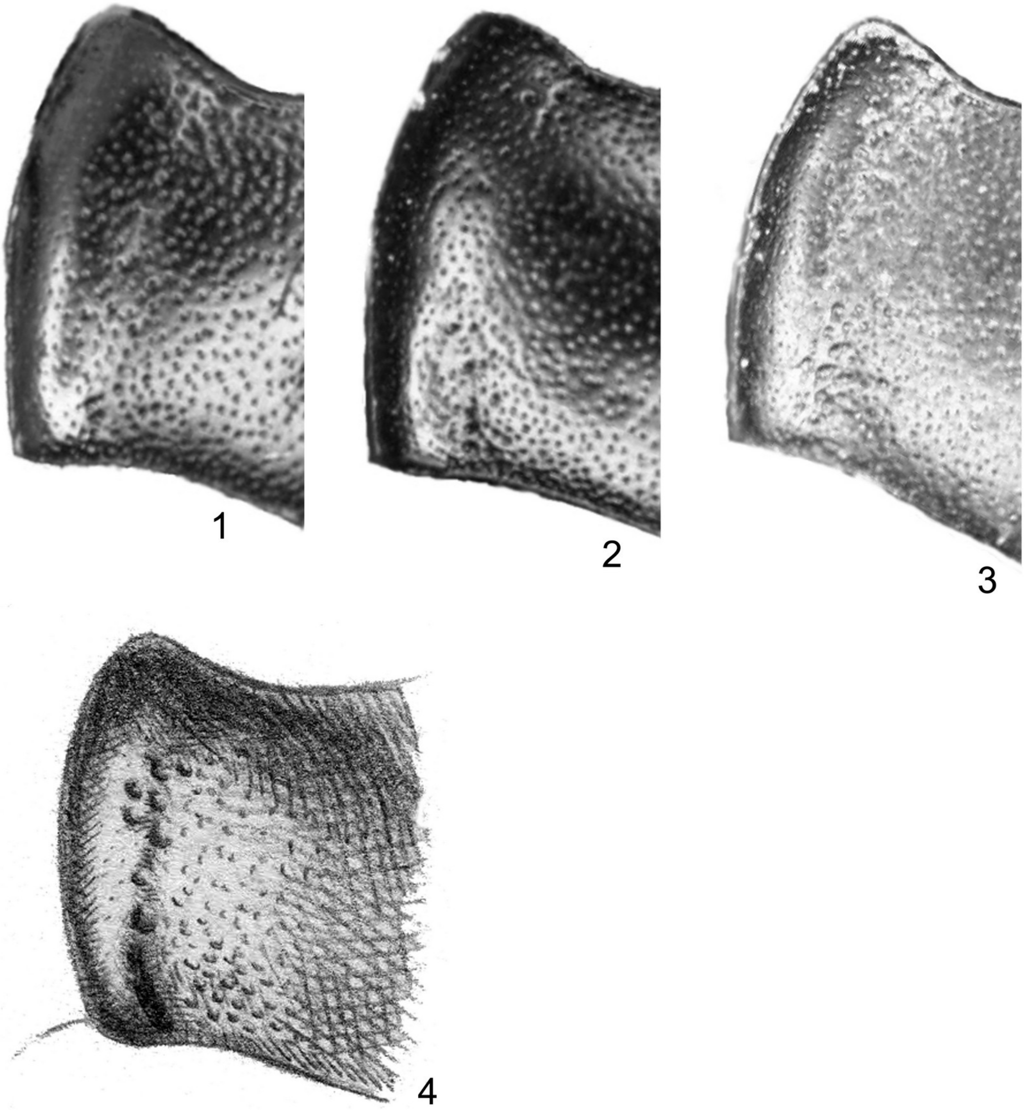
Differential diagnosis. It differs from the nominotypical subspecies in: dorsum moderately shining, dark blue; pronotal lateral impression present basally only, very shallow, obsolete and filled with several large punctures there, and completely absent in anterior ¾. Figs. 11, 16, 17, 23.

Material: holotype: European Russia, Lipetsk reg., 30 km E from Elets city, Galichia Gora, steep cliff to the river Don, 24.6.2007, M. Tsurikov leg.: 1 male (ZIN); paratypes (ZIN, ZGG, BC): the same locality, M. Tsurikov and A. Bieńkowski leg., 19.5.2002: 1 male, 11.8.2004 (only one elytron), 6.5.2005: 1 female, 17.6.2005: 1 male, 20.7.2006: 1 spec., 19.6.2007: 1 spec., 30.7.2007: 1 male + two elytra, 10.8.2007: 1 female; 30km E from Elets city, Morozova Gora, 10.6.1987: 1 female, Panteleeva leg.

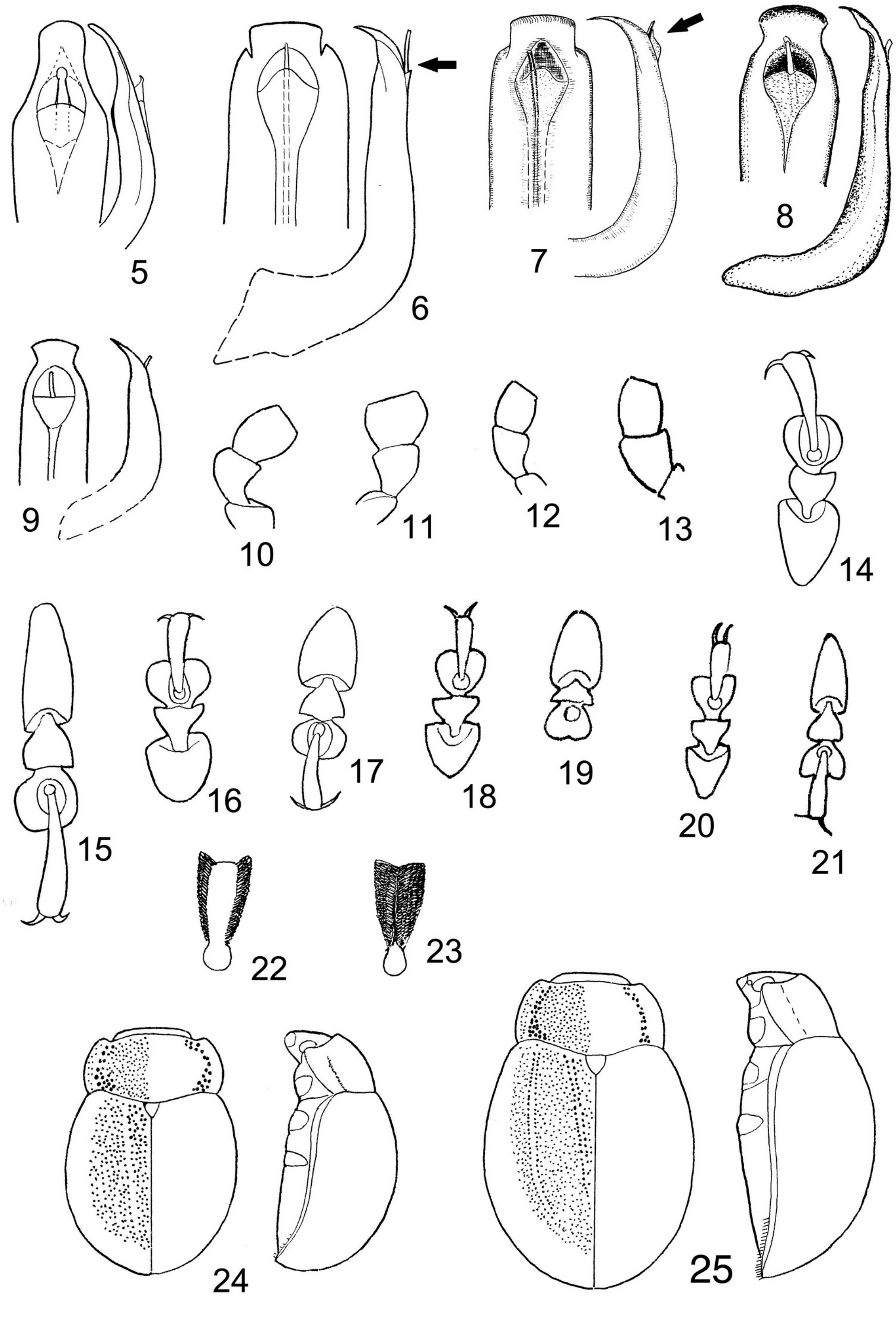
Specimens, not included in the type series: Lipetsk reg., 30 km E from Elets city, Galichia Gora, steep cliff to the river Don:17.6.2005: 5 specimens, 27.8.2006: 1 spec., 23.5.2007: 1 spec., 19.6.2007: 10 spec., 24.6.2007: 2 spec., 19.7.2007: 1 spec., 22.7.2008: 1 spec., 25.7.2012: 1 spec., 13.5.2013: 1 spec. All in ZGG.

Discussion. At present, 33 specimens of new subspecies are found. All of them are very similar externally and differ from nominotypical subspecies. The interpretation of the nominotypical subspecies is based on the original description (Jacobson, 1897), examined lectotype and 8 additional specimens (4 from Ural Mts., 4 from Zhiguli Mts.).

Etymology. The subspecies is named in memory of my friend Mikhail Nikolayevich Tsurikov, an entomologist who devoted his life to studying the beetles of Galichia Gora, who found this subspecies and studied its biology.



Crositops **figures 1–4:** pronotum: 1–2 – *Chrysolina roddi misha* subsp. nov.: 1 – male (European Russia: Lipetsk reg., Galichia Gora), 2 – female (the same locality); 3 – *Ch. roddi roddi*, pronotum, female (European Russia: Samara reg., Zhiguli Mts.); 4 – *Ch. pedestris* (*Chrysomela pterosticha*, lectotype). (Fig. by an unknown author: 4, others – orig. photos)



***Crositops* figures 5-25:** 5–9 – aedeagus, dorsal and lateral view: 5 – *Chrysolina pedestris* (E Kazakhstan), 6 – *Ch. roddi roddi* (S Urals, Chelyabinsk reg.), the arrow shows the plane of dorsal view, 7 – *Ch. roddi misha* (European Russia: Lipetsk reg., Galichia Gora), the arrow shows the plane of dorsal view, 8 – *Ch. kabaki* (Altai Krai), 9 – *Ch. kabaki* (holotype, E Kazakhstan); 10–13 – maxillary palpus: 10 – *Ch. pedestris*, ♀ (syntype, Altai Krai), 11 – *Ch. roddi misha* ♂, 12 – *Ch. roddi roddi*, ♀ (Samara reg.), 13 – *Ch. kabaki*, ♂ (holotype), 14–21 – tarsus: 14 – fore-t., *Ch. roddi roddi*, ♀ (Samara reg.), 15 – hind-t., *Ch. roddi roddi*, ♀ (Samara reg.), 16 – fore-t., *Ch. roddi misha* ♂, 17 – hind-t., *Ch. roddi misha* ♂, 18 – fore-t., *Ch. kabaki*, ♂ (holotype), 19 – hind-t., *Ch. kabaki*, ♂ (holotype), 20 – fore-t., *Ch. kabaki*, ♀ (paratype), 21 – hind-t., *Ch. kabaki*, ♀ (paratype); 22–23 –1st hind-tarsomere, ventral view: 22 – *Ch. pedestris*,

♀ (syntype), 23 – *Ch. roddi misha* ♀; 24–25 – total view: 24 – *Ch. kabaki*, ♂ (holotype), 25 – *Ch. roddi roddi*, ♀ (Samara reg.). (Orig.)

Subgenus *Cyrtochrysolina* Kippenberg, 2012

Diagnosis

Dorsum dark brown with metallic reflection (bronze, coppery, purple, rarely blue or greenish), mostly unicolorous, rarely metallic tint slightly differs on head+pronotum and elytra.

Last maxillary palpomere similar in both sexes. It is oval, elongate, obliquely truncate apically, similar to the penultimate one in length and width (Fig. 4).

Antenna inserted closer to clypeus than to eye, narrow.

Pronotum broadest basally or before base, swollen laterally along entire length. Lateral impression narrow, furrow-shaped in basal ¼, and broad, shallow to obsolete in apical ½. Pronotal disc densely finely punctate. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore absent.

Prothoracic hypomeron weakly convex to almost flat, laterally with obsolete wrinkles; without outer border. Basal fold distinct, moderate. Intercoxal prosternal process medially deeply impressed, with elevated lateral borders along entire length.

Metasternum entirely marginated anteriorly.

Elytron with obsolete humeral callus. Elytral puncturation double (large and fine punctures), dense, mostly irregular. Large punctures partly forming paired rows or entirely confuse.

Elytral epipleura inclined outside, visible along entire length in lateral view, densely ciliate near apex.

Hind wings very reduced, as long as metathorax.

Tarsomeres 1–3 with entire sole; they are narrow in female; fore-tarsomeres 1 and 3, mid-tarsomere 1 and hind-tarsomere 1 broadened in male (Fig. 3). Claw tarsomere without denticles beneath.

Pygidium convex, with weak longitudinal impression in basal ½ only.

Last abdominal sternite evenly convex, with apical margin broadly truncate or very shallowly broadly emarginated, similar in both sexes.

Aedeagus (Fig. 2) narrow, long, tube-shaped, with apex triangularly rounded, bearing apical denticles on the ventral side, the denticles not projecting beyond lateral sides and invisible from dorsal side. Flagellum narrow, broadened before apex, exposed.

Differential diagnosis

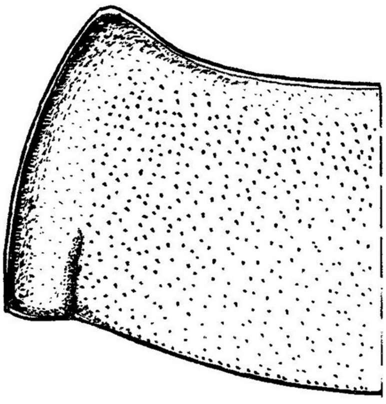
Cyrtochrysolina is morphologically close to the subgenera *Colaphoptera*, *Chrysolina* s.str., *Sphaerochrysolina*, *Lopatinica*, and *Timarchida*. It differs from *Chrysolina* s.str. and *Timarchida* in male last maxillary palpomere narrow. It differs from *Colaphoptera, Chrysolina* s.str., and *Lopatinica* in male tarsomeres 1 broadened. It differs from *Chrysolina* s.str., *Sphaerochrysolina, Timarchida*, and *Lopatinica* in the aedeagus bearing apical denticles on ventral side. It differs from *Sphaerochrysolina, Lopatinica*, and *Timarchida* in narrow, deep lateral furrows near the pronotal base.

This subgenus includes one species, *Chrysolina marcasitica* (Germar, 1823) (Figs. 1–4).

Key to subspecies

The subspecies are rather close morphologically to each other.

1(2) Pronotum with lateral sides almost parallel in basal ½–⅔, and roundly convergent apically. Length 7.0–7.8 mm. Montenegro, Bosnia-Herzegowina.
Ch. marcasitica dissipabilis Bechyné, 1950a
2(1) Pronotum with lateral sides evenly rounded (Fig. 1).
3(4) Pronotum broadest basally; its discal punctures slightly finer than in the following subspecies, with intervals flat. Length 7.2–8.5 mm. Alps, N Italy.
Ch. marcasitica marcasitica (Germar, 1823)
4(3) Pronotum broadest before base (Fig. 1), with discal punctures slightly larger than in the previous subspecies, with intervals slightly convex and wrinkled. Length 7.3–8.3 mm. Carpathians, Sudetes, Harz.
Ch. marcasitica turgida (Weise, 1882)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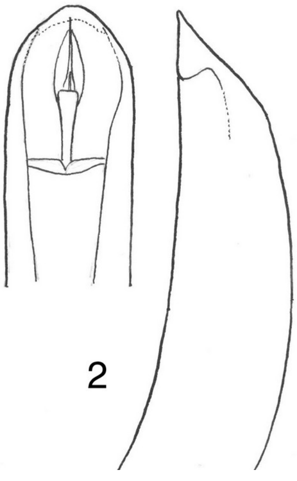
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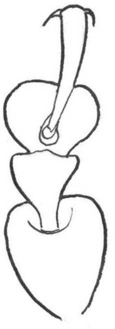
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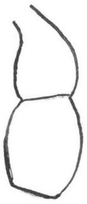
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***Cyrtochrysolina* figures 1–4:** 1 – *Chrysolina marcasitica turgida*, ♀ (Urkaine: Carpathians), pronotum; 2–4 – *Ch. marcasitica marcasitica*, ♂ (Austria): 2 – aedeagus, dorsal and lateral view, 3 – fore-tarsus, 4 – apex of maxillary palpus. (Orig.)

Subgenus *Diachalcoidea* Bechyné, 1955b

Diagnosis

Dorsum pure black, or black with metallic reflection (mostly bronze, rarely blue), or dark metallic, rarely with elytra brown. Elytra mostly margined laterally or laterally and basally with red or rufous stripe, or only with elytral epipleura rufous, or elytra wholly metallic (in *Ch. limbatella* only).

Last maxillary palpomere similar in both sexes. It is oval, elongate, obliquely truncate apically, similar to penultimate one in length and width on some longer than the latter.

Antenna inserted closer to clypeus than to eye, narrow.

Pronotum broadest basally or before base, moderately swollen laterally along entire length. Lateral impression moderately deep to shallow and covered by partly coalescent punctures in basal ⅓, shallow to obsolete and covered by numerous separate punctures in apical ⅔. Pronotal disc densely finely punctate or only microscopically punctulate, looks like smooth. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore absent.

Prothoracic hypomeron weakly convex, laterally weakly impressed and wrinkled; without outer border. Basal fold distinct. Intercoxal prosternal process medially longitudinally impressed, with elevated lateral borders along entire length, or without impression.

Metasternum entirely marginated anteriorly.

Elytron with humeral callus moderately convex to weak or obsolete. Elytral puncturation forming abbreviated sutural row and 9 entire rows of moderate or large, numerous punctures. Rows regular, slightly paired or almost equidistant. Intervals between puncture rows flat or very slightly elevated, covered by numerous very fine punctures.

Elytral epipleura inclined outside, visible along entire length in lateral view, densely or sparsely ciliate near apex.

Hind wings normally developed or strongly reduced.

Tarsi narrow in both sexes; tarsomere 1 of all tarsi slightly broader in male than in female. In male tarsomeres 1–3 with entire sole; in female tarsomeres 1–3 or only 1 with glabrous stripe beneath. Claw tarsomere without denticles beneath.

Pygidium with distinct furrow along entire length.

Last abdominal sternite evenly convex, with apical margin broadly truncate, similar in both sexes or this sternite broadly impressed along apical margin in male.

Aedeagus tube-shaped, moderately flattened and curved dorso-ventrally, with apex rounded or truncate, bearing two large ventro-lateral denticles in most species (denticles absent in *Ch. dohrnii* and *Ch. sacarum*), the denticles not projecting beyond lateral sides and invisible from dorsal side. Flagellum narrow, exposed.

Differential diagnosis

Diachalcoidea externally looks like some members of the subgenus *Chalcoidea* with rufous elytral lateral stripe and differs from them in the aedeagus shape: without narrow apical projection. Color variation of *Ch.* (*Diachalcoidea*) *aegyptiaca* with entirely brown elytra shows resemblance with the members of the subgenus *Palaeosticta*, from which it differs in elytral puncture rows very regular, without large punctures in the intervals, in male trasi narrower, female tarsomere 1 with glabrous stripe beneath at least basally. *Ch.* (*Diachalcoidea*) *dohrnii* looks like the members of the subgenus *Ch.* (*Zeugotaenia*) and differs from them in narrow, elongate last maxillary palpomere in both sexes, narrow tarsomeres 1–3 in male, shallow pronotal lateral impression, not forming deep narrow furrow near base, and entirely regular, distinct elytral puncture rows.

Key to species and subspecies

1(6) Hind wings normally developed. Elytron with rufous lateral stripe. Aedeagus narrow and long.

2(5) Elytral puncture rows distinctly paired on disc: interval between rows in one pair as wide as 0.5–0.7 X between the pairs. Female: tarsomere 1with broad glabrous stripe margined with 1 row of dense setae laterally, tarsomeres 2 and 3 with glabrous stripe beneath (Fig. 6). Male: aedeagus without ventro-lateral denticles near apex (Fig. 12).

3(4) Elytral rufous lateral stripe usually occupies 1–2.5 external intervals (stripe occupying 3 intervals occurs in specimens from Kyrgyzstan: Naryn (140 spec. examined), and 2.7 intervals – from Kazakhstan: Alma-Ata (11 spec. examined)). Length 5.5–6.7 mm. S and S-E Kazakhstan, C Asia, Iran, Afghanistan.

Ch. sacarum sacarum (Weise, 1890a)

4(3) Elytral rufous lateral stripe occupies 4 external intervals. Length 6.3–6.5 mm. W Kazakhstan.

Ch. sacarum embiensis Lopatin, 1996

5(2) Elytral puncture rows slightly paired on disc: interval between rows in one pair as wide as 0.8–0.9 X between the pairs. Female: tarsomere 1with glabrous stripe, tarsomeres 2 and 3 with entire sole beneath (Figs. 7, 8).

Male: aedeagus with large ventro-lateral denticles near apex (Figs. 10, 13). Length 5.5–7.2 mm. Figs. 1, 4, 9, 14–18. Near East.

Ch. aegyptiaca (Olivier, 1807)

6(1) Hind wings vestigial.

7(8) Elytron black margined with rufous stripe basally and laterally. Elytral puncture rows distinctly paired on disc: interval between rows in one pair as wide as 0.5–0.6 X between the pairs. In female, tarsomere 1 with narrow glabrous stripe in basal ½ beneath, tarsomeres 2 and 3 with entire sole. Aedeagus broad and short, without large ventro-lateral denticles apically (Fig. 11). Length 6.5–7.9 mm. Figs. 2, 3, 5. Syria, Lebanon.

Ch. dohrnii (Fairmaire, 1865)

8(7) Elytron wholly metallic (or brown with metallic shine), or with rufous lateral stripe, or with only epipleura rufous. Elytral puncture rows slightly paired or equidistant on disc. In female, tarsomere 1 with narrow glabrous stripe in basal ½ or along entire length beneath, tarsomeres 2 and 3 with entire sole. Aedeagus with large ventro-lateral denticles apically, similar to that in *Ch. aegyptiaca.*

9(12) 5th elytral row consists of 25–30 moderately large punctures.

10(11) Aedeagus pointed and slightly curved down apically (Fig. 19). Head and pronotum green with golden reflection, scutellum and elytra brown with very strong violet or green reflection (they look like dark metallic in sun shine), elytral punctures with weak violet oreol; or pronotum turquoise and elytra violet, narrowly margined with yellowish-green stripe laterally. Elytral epipleura rufous. Length 4.6 mm (male), 5.5 mm (female). Figs. 19–23. Ethiopia.

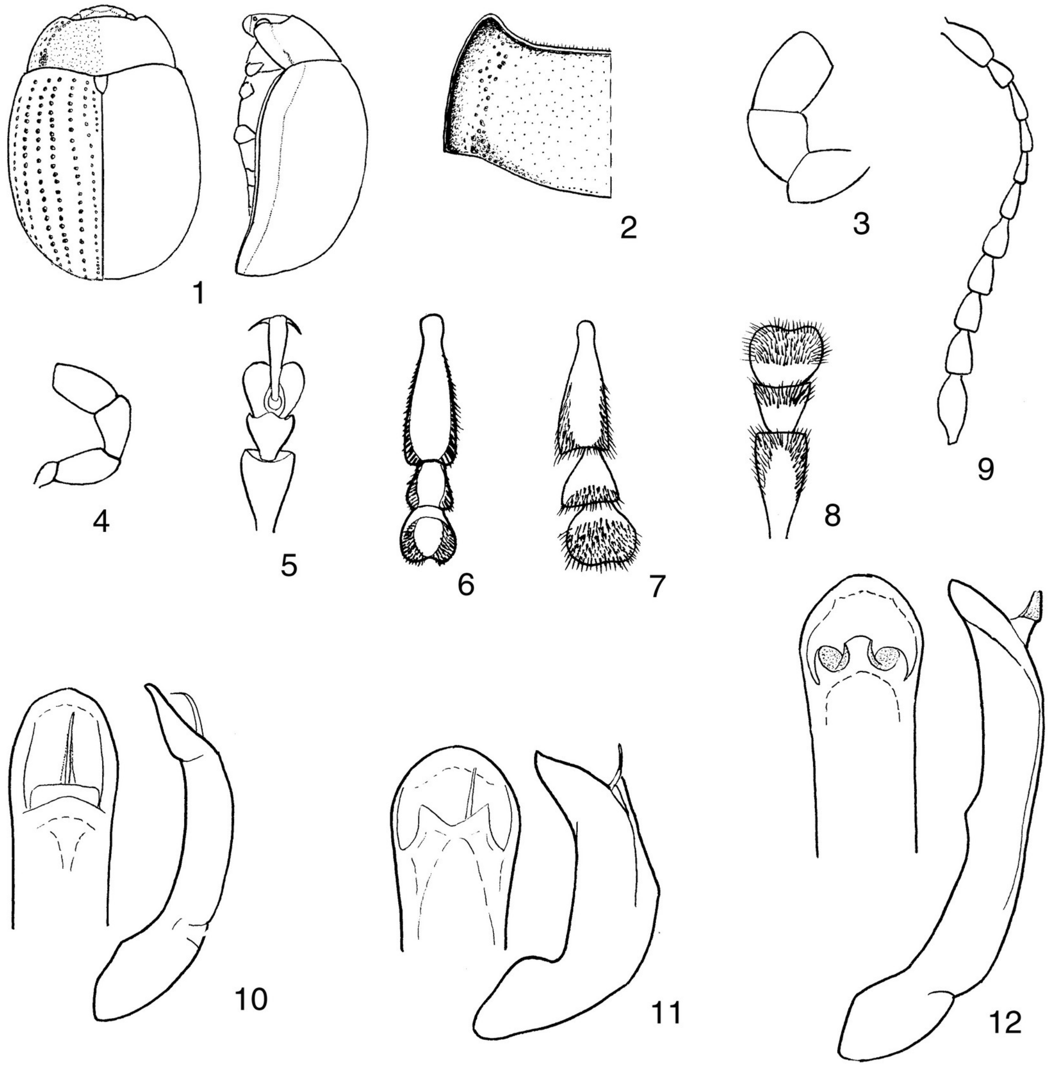
Ch. silvanae Daccordi, 1978b

11(10) Aedeagus hook-shaped at apex, therefore apex looks like shallowly emarginated in dorsal view (Fig. 26). Head and pronotum coppery with purple reflection, pronotal lateral calli shine red in the holotype, scutellum light brown margined with dark, elytra light brown with metallic shine, with basal and lateral sides paler, rufous; or head, pronotum, and scutellum green with golden reflection, pronotal anterior margin and lateral calli red in the holotype, elytra coppery or brown with rufous lateral stripe occupied 1 external interval and epipleura. Length 5.7 mm (male), 5.7–6.0 mm (female). Figs. 24–26. Ethiopia.

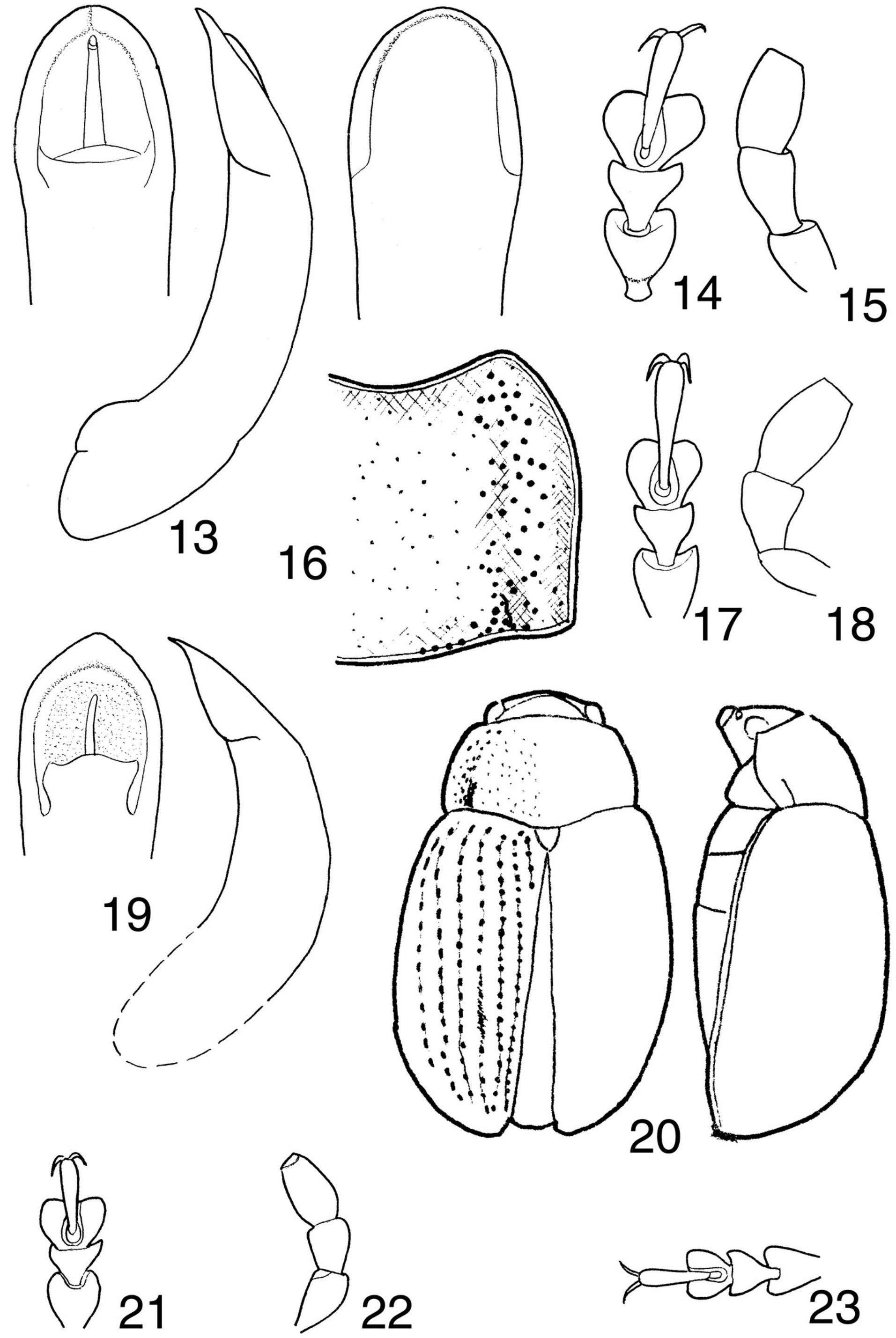
Ch. vignai Daccordi, 1978a

12(9) 5th elytral row consists of 10–18 large punctures. Aedeagus rounded apically (Fig. 28). Coloration varies: 1) head and pronotum dark coppery, elytra green with coppery reflection and external interval rich coppery; 2) head, pronotum (with exception of narrow lateral stripe), and lateral side of elytra bluish green, elytra (with exception of lateral stripe), scutellum, elytral epipleura, and lateral side of pronotum dark purple; 3) frons violet, pronotum medially and laterally violet, with disc green with yellow reflection, elytra green with reddish-violet lateral side and epipleura, 4) head and pronotum violet, scutellum and elytra dark bronze-green, elytral

epipleura and lateral stripe occupying 1 outermost interval reddish. Length 6.5 mm (male), 6.7 mm (female). Figs. 27, 28. Ethiopia.
Ch. limbatella (Weise, 1907b)

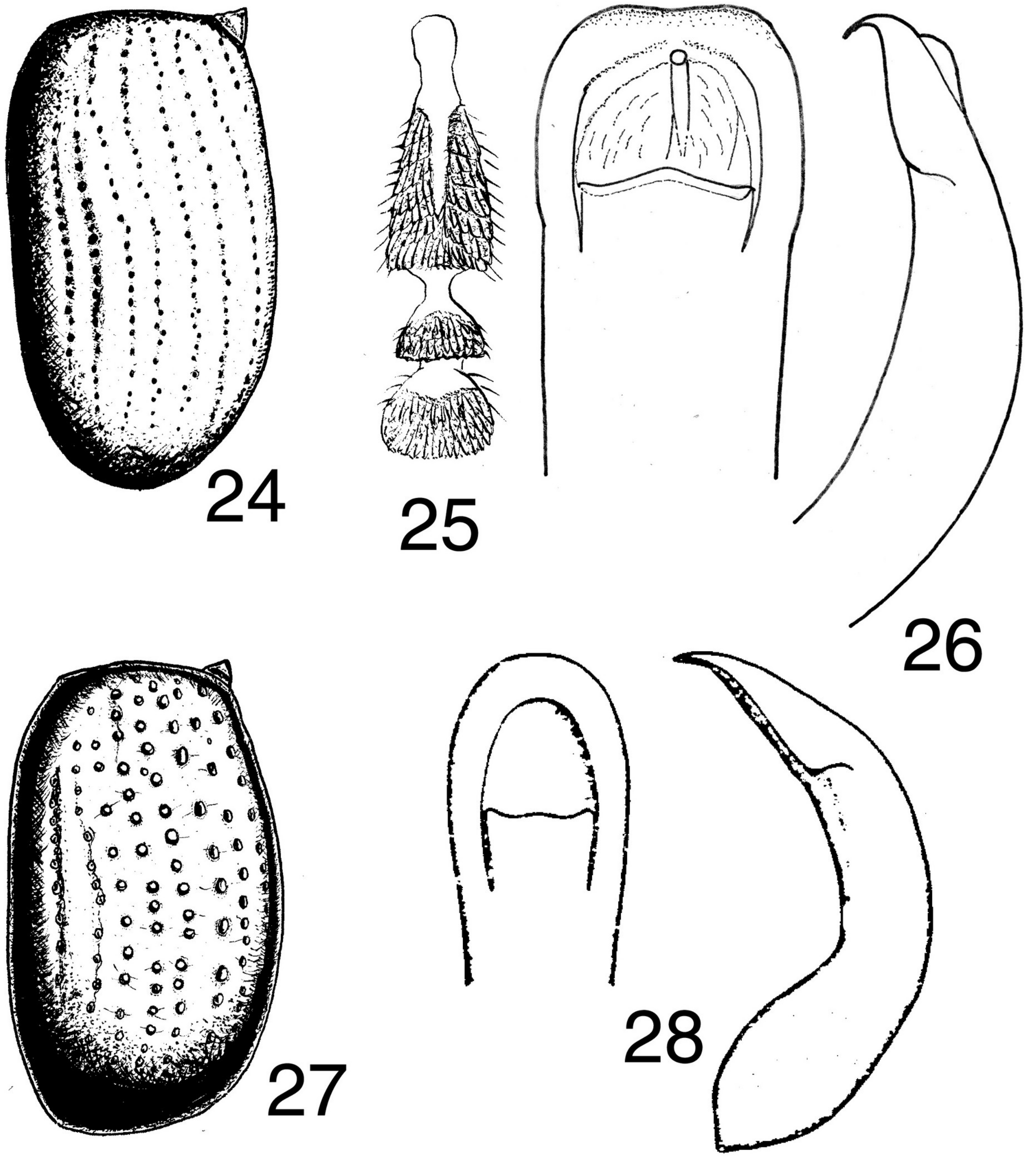


***Diachalcoidea* figures 1–12:** 1 – *Chrysolina aegyptiaca*, ♀, dorsal and lateral view; 2 – *Ch. dohrnii*, ♂ (Lebanon), pronotum; 3–4 – maxillary palpus: 3 – *Ch. dohrnii*, ♂, 4 – *Ch. aegyptiaca*, ♀; 5 – *Ch. dohrnii*, ♂, fore-tarsus; 6–7 – hind-tarsus, ♀: 6 – *Ch. sacarum sacarum* (Tajikistan), 7 – *Ch. aegyptiaca*; 8–9 – *Ch. aegyptiaca*, ♀: 8 – fore-tarsus; 9 – antenna; 10–12 – aedeagus, dorsal and lateral view: 10 – *Ch. aegyptiaca* (*Ch. palmyrensis palmyrensis*, topotype, Palestinian Authority: Jericho), 11 – *Ch. dohrnii* (Lebanon), 12 – *Ch. sacarum sacarum* (Afghanistan). (Orig.)



***Diachalcoidea* figures 13–23:** 13–18 – *Chrysolina aegyptiaca* (syntypes *Chrysomela rufomarginata* Baly, "Mesopotamia"): 13–15 – male: 13 – aedeagus, dorsal, lateral, and ventral view, 14 – fore-tarsus, 15 – maxillary palpus, 16–18 – female: 16 – pronotum, 17 – fore-tarsus, 18 – maxillary palpus; 19–23 – *Ch. silvanae* (Ethiopia): 19–22 – holotype, male: 19 –

aedeagus, dorsal and lateral view, 20 – total dorsal and lateral view, 21 – fore-tarsus, 22 – maxillary palpus, 23 – paratype, female, fore-tarsus. (Orig.)



***Diachalcoidea* figures 24–28:** 24–26 – *Chrysolina vignai* (Ethiopia): 24 – female, left elytron, 25 – female, hind-tarsus, ventral view, 26 – male (holotype), aedeagus, dorsal and lateral view; 27–28 – *Ch. limbatella* (Ethiopia): 27 – female, left elytron, 28 – male (holotype *Chrysolina copta*), aedeagus, dorsal and lateral view. (After: Daccordi, 1978b: 28; others – orig.)

Subgenus *Erythrochrysa* Bechyné, 1950a

Diagnosis

Head, pronotum, scutellum, legs, and underside metallic (purple, golden, green, blue, violet); elytra red to bright brown, rarely with weak metallic reflection.

Last maxillary palpomere in male slightly broader than in female. It is oval, obliquely truncate apically, similar to penultimate one in length and width.

Antenna inserted closer to clypeus than to eye, narrow.

Pronotum broadest basally or before base, moderately swollen laterally along entire length. Lateral impression moderately to rather deep basally and apically or along entire length; covered by large, partly coalescent punctures. Pronotal disc densely finely punctate. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore present.

Prothoracic hypomeron almost flat to weakly convex, laterally without distinct impression, with obsolete wrinkles; without outer border. Basal fold strong. Intercoxal prosternal process medially longitudinally impressed, with elevated lateral borders along entire length.

Metasternum entirely marginated anteriorly.

Elytron with weak humeral callus. Elytral puncturation mostly entirely irregular; rarely 1–2 rows can be traced along suture or lateral side. Intervals between puncture rows covered by numerous very fine punctures.

Elytral epipleura inclined outside, visible along entire length in lateral view, densely ciliate near apex.

Hind wings normally developed.

Tarsi narrow in both sexes; fore- and mid-tarsomere 1 slightly broader in male than in female. In male tarsomeres 1–3 with entire sole; in female all tarsomeres 1 with very narrow glabrous stripe beneath or with entire sole. Claw tarsomere without denticles beneath.

Pygidium with deep furrow in basal ½ only.

Last abdominal sternite evenly convex, with apical margin broadly truncate in male, rounded in female.

Aedeagus tube-shaped, curved dorso-ventrally, with apex simple, narrowly truncate. Flagellum narrow, exposed.

Differential diagnosis

Erythrochrysa externally looks like some members of the subgenus *Melasomoptera* and *Pierryvettia* and differs from them in the elytral epipleura posterior to middle oblique, visible along entire length in lateral view. Besides that, *Erythrochrysa* differs from the members of *Pierryvettia* with rufous elytra (e.g., *Ch. bowringii*) in distinct pronotal lateral impression. *Erythrochrysa* differs from *Ch.* (*Allohypericia*) *koltzei* in elytral punctures mostly irregular, homogenous, pronotal lateral impression deeper, and aedeagus structure.

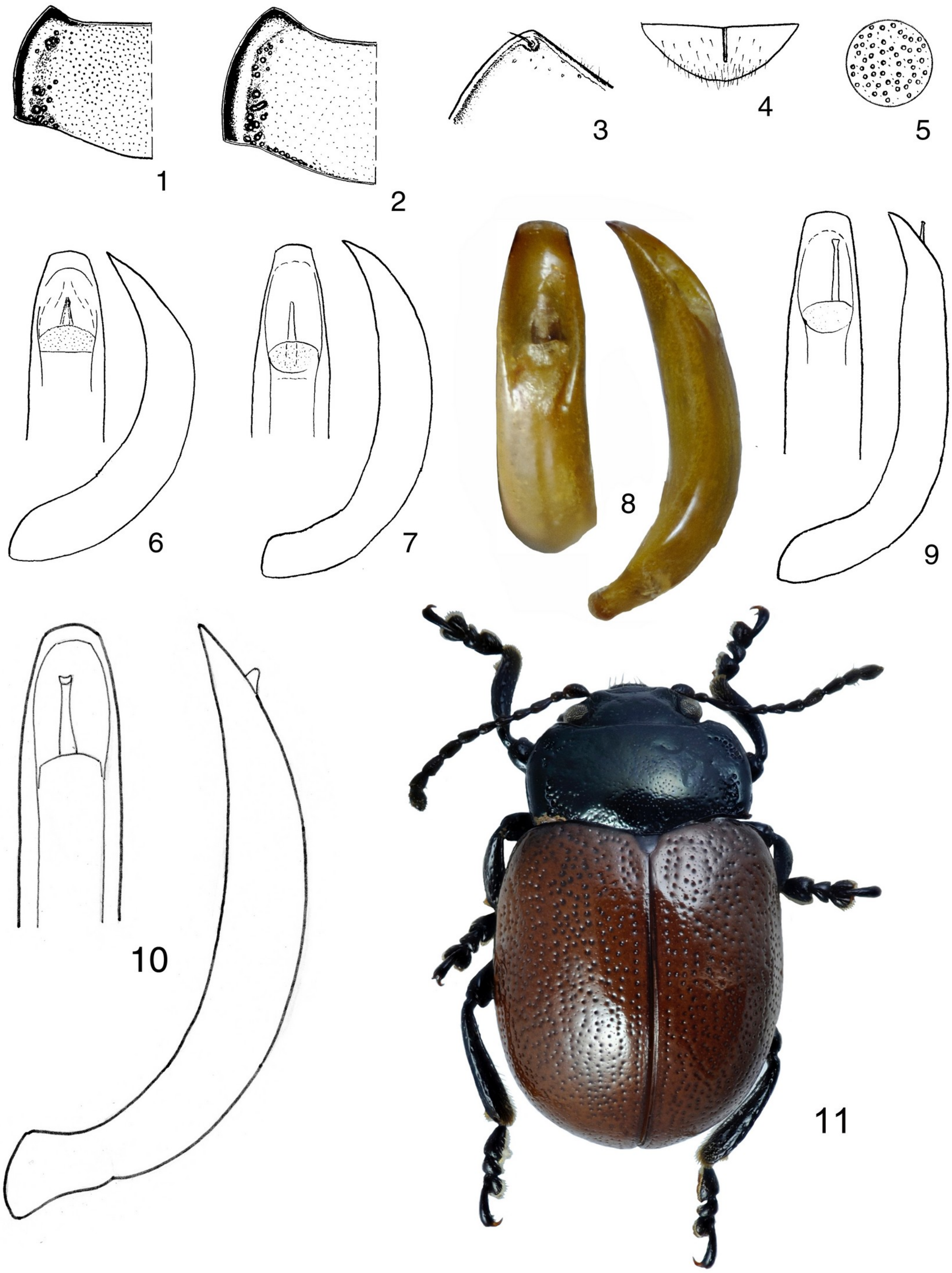
Key to species and subspecies

1(4) Pronotal lateral impression broadly interrupted at mid-length (Figs. 1, 11). Aedeagus evenly arc-shaped in lateral view, with flagellum pointed apically (Figs. 6–8). Length 6.1–8.6 mm.

2(3) Head, pronotum and scutellum mostly purple, golden, green, blue, or violet, very rarely dark olivaceous. Subspecies widely distributed in Palaearctic except Japan. Figs. 3–5.
Ch. polita polita (Linnaeus, 1758)

3(2) Head, pronotum and scutellum always dark olivaceous. Subspecies from Japan (Honshu). Figs. 8, 11.
Ch. polita kirigaminensis Suzuki et Saitoh, 2011

4(1) Pronotal lateral impression deep along entire length (Fig. 2). Aedeagus almost straight in apical ½ and curved down at apex or slightly arc-shaped in apical ½ in lateral view; with flagellum broadened apically (Figs. 9, 10). Head, pronotum and scutellum golden green, green, or violet with bluish tint. Length 6.8–9.2 mm. Species from Lebanon, Syria, Turkey, and Armenia.
Ch. ogloblini (Ter-Minasian, 1950)



***Erythrochrysa* figures 1–11:** 1–2 – pronotum: 1 – *Chrysolina polita polita* (European Russia), 2 – *Ch. ogloblini* (Turkey); 3–5 – *Ch. polita polita* (N Caucasus): 3 – setiferous pore at left anterior pronotal angle, 4 – pygidium, 5 – elytral punctures; 6–10 – aedeagus, dorsal and lateral view: 6 – *Ch. polita polita* (N Caucasus), 7 – *Ch. polita polita* (syntype *Chrysomela jeanneli*), 8 – *Ch. polita kirigaminensis* (Japan: Honshu), 9–10 – *Ch. ogloblini*: 9 – male from Turkey, 10 – male from Armenia; 11 – *Ch. polita kirigaminensis,* total dorsal view. (Orig.)

Subgenus *Euchrysolina* Bechyné, 1950a

Diagnosis

Body entirely metallic, mostly green with golden, blue, violet, red pattern, or body red, or violet; with only antennomeres 1–2 or 1–3 rufous below.

Last maxillary palpomere oval, obliquely truncate, in male slightly broader than in female; in female last palpomere similar to the penultimate one in length and width, in male last palpomere slightly broader than penultimate one.

Antenna inserted closer to clypeus than to eye, narrow.

Pronotum broadest basally, or at mid-length, or before mid-length, moderately to rather swollen laterally along entire length. Lateral impression absent or more or less developed, present basally or along entire length, covered by moderately large to rather large punctures which separated from each other or partly coalescent. Pronotal disc densely punctate, puncturation double, consists of moderately large and very fine punctures. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore present.

Prothoracic hypomeron weakly convex, laterally impressed and wrinkled; with outer border. Basal fold strong. Intercoxal prosternal process medially longitudinally impressed, with elevated lateral borders along entire length.

Metasternum entirely marginated anteriorly.

Elytron with humeral callus weak but distinct. Elytral puncturation entirely irregular.

Elytral epipleura inclined outside, visible along entire length in lateral view (Fig. 1), densely ciliate near apex.

Hind wings normally developed.

Tarsomeres 1–3 narrow in female, all tarsomeres 1 broadened in male. All tarsomeres 1–3 with entire sole in both sexes. Claw tarsomere without denticles beneath.

Pygidium with furrow in basal ½ only.

Last abdominal sternite: ♀: evenly convex, with apical margin rounded, ♂: convex with shallow longitudinal medial furrow, broadly emarginated apically.

Euchrysolina

Aedeagus tube-shaped, strongly curved dorso-ventrally, with apex simple, triangular or narrowly truncate. Flagellum narrow, exposed, complicated, articulate.

Differential diagnosis

Euchrysolina members, especially *Ch. graminis*, externally look like some members of the subgenus *Synerga*, especially *Ch. herbacea*, and differ from them in the elytral epipleura posterior to middle oblique, visible along entire length in lateral view.

Key to species and subspecies

1(4) Pronotal lateral impressions absent or developed (weak to distinct) in basal ½ only (Fig. 8). Antennomeres 7–10 broader, 1.4–1.7 X as long as wide (Fig. 14). Aedeagus: apical segment of flagellum short (Fig. 5).

2(3) Pronotal lateral impression very weak or absent.

Ch. graminis (Linnaeus, 1758)

Two subspecies morphologically close to each other are keyed here.

(a) subsp. *graminis*. Europe (except south of W Europe), Caucasus, Kazakhstan, C Asia, Siberia, Mongolia (except eastern). Body oval, moderately large. Antennomeres 1–2 or 1–3 rufous apically on underside. Dorsal coloration variable: a) golden green with (or without) golden or red lateral stripe, or b) dorsum green with blue pronotal base, elytral suture and discal stripe, or c) dorsum red with golden suture; rarely pronotum bluish green and elytra golden green or green. Length 7.1–10.3 mm. Figs. 2, 10, 11, 12.

(b) subsp. *santonici* (Contarini, 1847). Austria, Italy, Corsica, France, Spain. Body oval or elongate, large, convex. Antennomeres 1–2 or 1–3 rufous apically on underside. Pronotum bluish green or golden green, elytra golden green with broad red lateral stripe. Length 8.5–12.0 mm. Aedeagus – fig. 3.

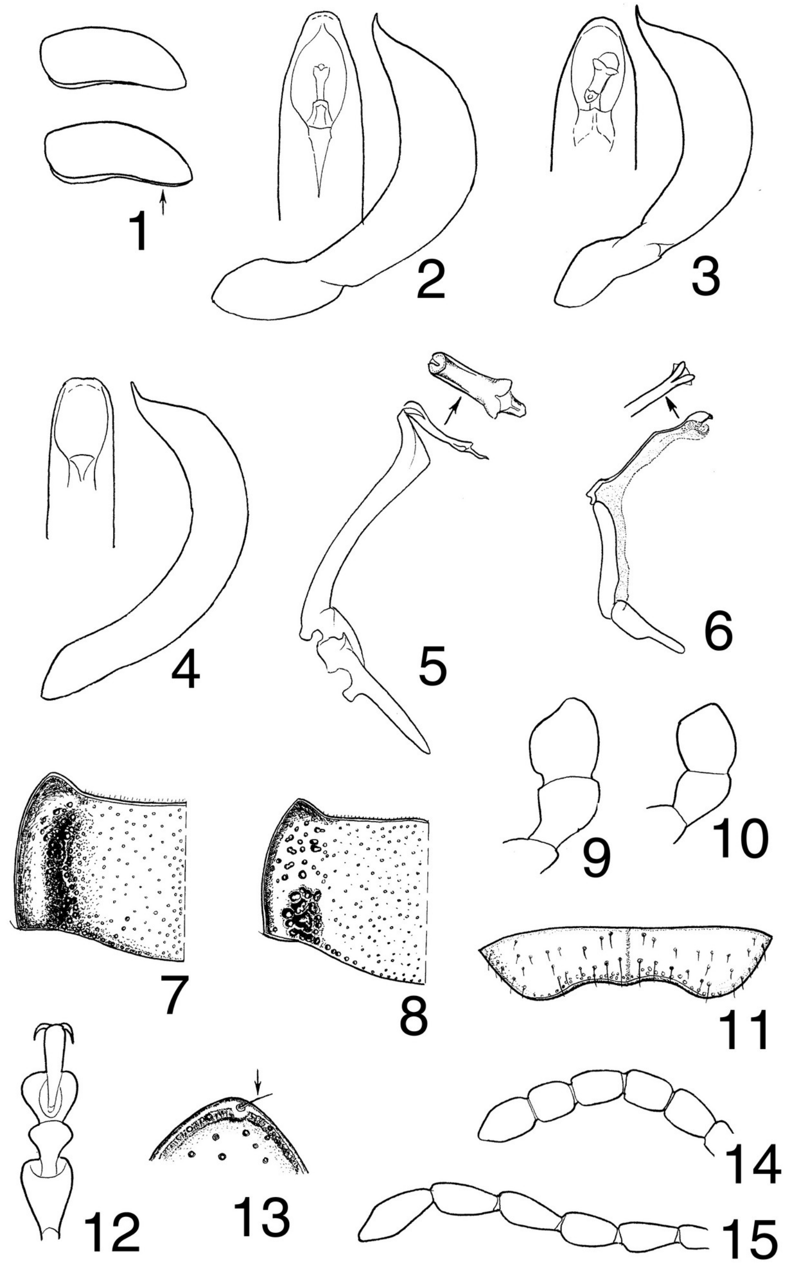
3(2) Pronotal lateral impression broad, distinct, filled with numerous large punctures in basal ½. Body oval, large, convex. Antennomeres 1–2 or 1–3 rufous apically on underside. Dorsal coloration variable: a) usually golden green, with violet pronotal base, elytral suture and broad discal stripe, and golden stripe along suture, or b) dorsum red with golden green pronotal base, elytral suture and discal stripe. Length 8.5–12.0 mm. Fig. 9. Far East, Korea, E Mongolia, N and N-E China, Taiwan.

Ch. graminis auraria (Motschulsky, 1860a)

4(1) Pronotal impression deep along almost entire length except near apex (Fig. 7). Antennomeres 7–10 narrower, 1.7–2 X as long as wide (Fig. 15). Aedeagus: apical segment of flagellum long, as long as penultimate one (Fig. 6). Dorsal coloration variable: a) red with golden green (or green) pronotal anterior and posterior sides, narrow longitudinal medial stripe, elytral suture and discal stripe, or b) dorsum green with violet pronotal anterior and posterior sides, narrow longitudinal medial stripe, pronotal lateral impressions, elytral suture, discal stripe, and lateral border, or c) dorsum mostly violet with bluish pronotal lateral calli, spots on pronotal disc, and 2 longitudinal stripes on each elytron, one near suture, and another laterally. Length 7.9–14.2 mm. Figs. 4, 13. Far East, Japan.

Euchrysolina

Ch. virgata (Motschulsky, 1860a)



***Euchrysolina* figures 1–15:** 1 – elytron, lateral view: *Chrysolina* (*Euchrysolina*) *graminis* (below) in comparison with *Ch.* (*Synerga*) *herbacea* (above), elytral epipleura marked with arrow; 2–4 – aedeagus, dorsal and lateral view: 2 – *Ch. graminis graminis* (syntype *Chrysomela artemisiae*), 3 – *Ch. graminis santonici* (syntype *Chrysomela graminis* var. *schallehni*), 4 – *Ch. virgata* (Japan); 5–6 – flagellum of aedeagus: 5 – *Ch*. *graminis graminis* (European Russia, Orel reg.), 6 – *Ch. virgata* (Far East, Amur reg.); 7–8 – pronotum: 7 – *Ch. virgata* (Far East, Primorsky Krai), 8 – *Ch. graminis auraria* (Far East, Primorsky Krai); 9–10 – maxillary palpus of male: 9 – *Ch. graminis auraria* (Korea), 10 – *Ch. graminis graminis* (syntype *Ch. artemisiae*); 11 – *Ch. graminis graminis* (syntype *Ch. artemisiae*), male, last abdominal sternite; 12 – *Ch. graminis graminis*, male, fore-tarsus (European Russia, Orel reg.); 13 –

Ch. virgata, right anterior angle of pronotum with setiferous pore (Far East, Amur reg.), seta marked with arrow; 14–15 – 7–11th antennomeres: 14 – *Ch. graminis graminis* (syntype *Ch. artemisiae*), 15 – *Ch. virgata* (Japan). (Orig.)

Subgenus *Fastuolina* Warchałowski, 1991

Diagnosis

Body usually bright metallic, green with golden, blue, violet, red pattern, or body mostly blue or violet; with only antennomeres 1–3 rufous below.

Last maxillary palpomere elongate oval, obliquely truncate, similar in both sexes; last palpomere similar to penultimate one in length and width.

Antenna inserted closer to clypeus than to eye, narrow.

Pronotum mostly broadest basally, rarely before base, with lateral sides almost parallel in basal ⅔; moderately swollen laterally along entire length. Lateral impression absent and replaced with large punctures which more dense basally. Pronotal disc densely finely punctate. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore present.

Prothoracic hypomeron weakly convex, laterally impressed and wrinkled; with outer border presents near base. Basal fold strong. Intercoxal prosternal process medially longitudinally impressed.

Metasternum entirely marginated anteriorly.

Elytron with humeral callus moderately developed. Elytral puncturation mostly irregular; puncture rows weakly traced among irregular punctures.

Elytral epipleura inclined outside, visible along entire length in lateral view, densely ciliate near apex.

Hind wings normally developed.

Tarsomeres 1–3 narrow, almost similar in both sexes, with only tarsomere 3 slightly broader in male than in female. All tarsomeres 1–3 with entire sole in both sexes. Claw tarsomere with 2 denticles beneath apically (Figs. 3, 8).

Pygidium with weak furrow only near base.

Last abdominal sternite: ♀: evenly convex, with apical margin rounded, ♂: convex with apical margin broadly truncate.

Aedeagus tube-shaped, depressed and strongly curved dorso-ventrally, with apex flattened, three-lobed. Flagellum narrow, simple, tube-shaped, exposed.

Differential diagnosis

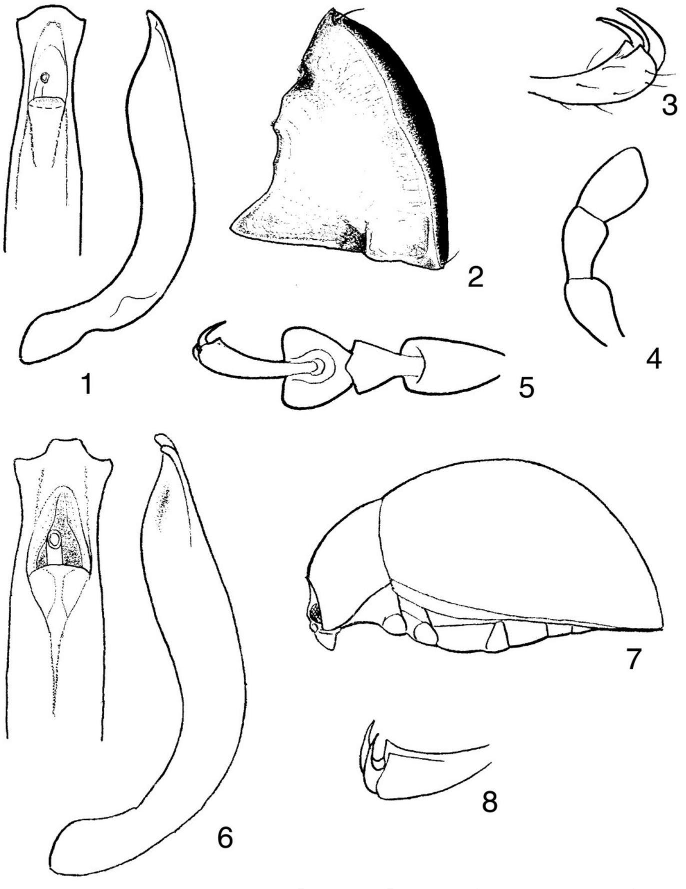
Fastuolina is characteristic of the combination of bright metallic coloration, mostly green with golden, red, blue, and violet pattern, and two denticle at underside of 4th tarsomere. It differs from the members of the subgenus *Pierryvettia* (with 4th tarsomere denticulate) in the elytral epipleura inclined outside, visible along entire length in lateral view.

This subgenus includes one species, *Ch. fastuosa* (Scopoli, 1763).

Key to subspecies

1(2) Body usually smaller (length 4.9–6.6 mm), less convex. Coloration variable: a) "typical form": mostly green with blue (or violet) pronotal base, elytral suture and discal stripe, and golden red stripe at elytral intervals 1–4 and sometimes laterally; b) ab. *inexplicabilis*: dark blue, violetish blue, violet with or without blue (or green) stripe on elytron. Figs. 1–6, 8. Most part of Europe, Caucasus, Kazakhstan, Siberia, Afghanistan, Asia Minor.
Ch. fastuosa fastuosa (Scopoli, 1763)

2(1) Body usually larger (length 6.2–7.6 mm), more convex (Fig. 7). Dorsum green with violet elytral suture and discal stripe, and sometimes golden green or golden red stripe at elytral intervals 1–4. C, S Italy, S Spain, Portugal.
Ch. fastuosa ventricosa (Suffrian, 1858)



***Fastuolina* figures 1–8:** 1–6 – *Chrysolina fastuosa fastuosa*: 1–5 – male (topotype, Slovenia, "Carniolia"): 1 – aedeagus, dorsal and lateral view, 2 –

prothoracic hypomeron, 3 – 4th fore-tarsomere, 4 – maxillary palpus, 5 – fore-tarsus; 6 – male (holotype *Chrysomela fastuosa biroi*, Romania), aedeagus, dorsal and lateral view; 7 – *Ch. fastuosa ventricosa*, male (Italy: Roma), lateral view; 8 – *Ch. fastuosa fastuosa* female (syntype *Chrysomela subfastuosa*), 4th hind-tarsomere. (Orig.)

Subgenus *Ghesquiereita* Bechyné, 1950c

Diagnosis

Body metallic, differently colored, in several species elytra with colored spots.

Last maxillary palpomere oval, obliquely truncate, or slightly trapeziform, not differ strongly from penultimate one in length and width, not differ in both sexes.

Antennae moderately or strongly broadened apically. Antennal insertion closer to clypeus than to eye. Orbital lines not reaching antennal bases.

Pronotum laterally weakly swollen, mostly without lateral impressions, or with very shallow impressions near base; with more or less numerous large punctures laterally. Lateral sides of pronotum more or less rounded or almost straight in basal ⅔. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore present.

Prothoracic hypomeron more or less convex, laterally impressed and wrinkled; with or without outer border. Basal fold absent. Intercoxal prosternal process medially longitudinally impressed or without impression.

Metasternum marginated anteriorly between mid-coxae in most species (immmarginated in *Ch. ruandana* only).

Elytra without humeral calli. Elytral punctures confuse or arranged in regular or irregular, paired rows; these rows distinct or hardly visible among dense irregular punctures in intervals.

Elytral epipleura inclined outside and visible along entire length in lateral view, ciliate apically.

Hind wings strongly reduced or absent.

Tarsomeres 1–3 entirely pubescent (tarsomere 1 with narrow glabrous stripe in basal ½ in *Ch. spiloptera* only) beneath in both sexes. Claw tarsomere without denticles. Tarsi similar in both sexes.

Pygidium with furrow along entire length or without furrow.

Last abdominal sternite evenly convex, rounded (female) or broadly truncate (male) apically.

Aedeagus narrow, tube-shaped, strongly curved dorso-ventrally, apically rounded, truncate or emarginated, with apical denticles on ventral side and with middle longitudinal elevation between these denticles. Flagellum simple, narrow, exposed.

Differential diagnosis

The members of the subgenus *Ghesquiereita* inhabit C Africa and differs from any other *Chrysolina* from that region in the combination of the following characters: 1) above entirely metallic, 2) elytral epipleura inclined outside, visible along entire length in lateral view, distinctly ciliate apically, 3) metasternum entirely marginated between mid-coxae in most species (immarginated in *Ch. ruandana* only), 4) orbital lines not reaching antennal bases. Some *Ghesquiereita* members (e.g., *Ch. ocelligera*) look like *Centoptera* members and differ from them in the pronotum more convex transversely (viewed frontally), without lateral impressions, in the absence of basal fold at prothoracic hypomeron, and in the aedeagus bearing middle longitudinal elevation between apical denticles. One member of the subgenus *Naluhia*, namely *Ch. nigromaculata* has color variation with entirely dark bronze green body. It resembles the members of the subgenus *Ghesquiereita* and differs from them in hind wings normally developed, in large elytral punctures forming equidistant, not paired rows, with elytral epipleura invisible laterally in apical part, in last maxillary palpomere short, and in orbital lines reaching clypeus. The members of the subgenus *Ghesquiereita* differ from the species of the subgenus *Liomela* in elytral epipleura distinctly ciliate apically and in flagellum of aedeagus simple, not folded in half in apical orifice of aedeagus.

Key to species (after Daccordi, 1982c, with few alterations)

Remark. *Chrysolina* (*Centoptera*) *metallica* is included in the following key because Daccordi (1982c) considered this species to be a member of the subgenus *Ghesquiereita*. I transferred (Bieńkowski, 2007a) *Ch. metallica* in the subgenus *Centoptera*. It is morphologically similar to Mediterranean species *Ch.* (*Centoptera*) *bicolor*. Many authors, e.g. Kryzhanovsky (2002), Bologna et al., (2008a), indicated the close relationships of Mediterranean and South African fauna.

1(24) Pygidium with longitudinal furrow along entire length.
2(13) Hind wings present, but strongly reduced.
3(4) Pronotum weakly convex transversely (viewed frontally), with shallow, wide lateral impressions (Fig. 39). Large punctures, filling the lateral impression, do not reach the pronotal lateral margin. Prothoracic hypomeron with strong basal fold. Head bronze or violet, pronotum, scutellum, and elytra bronze, punctures in elytral rows black narrowly surrounding with blue (Fig. 7). Length 8.1–10.4 mm (male), 9.3 mm (female). Aedeagus – fig. 65. S Africa.
Ch. metallica (Degeer, 1778)

4(3) Pronotum very convex transversely (viewed frontally), without lateral impressions. Large punctures at lateral sides of pronotum reach (or almost reach) the lateral margin. Prothoracic hypomeron without basal fold.

5(8) Elytral punctures arranged in 4 pairs of regular rows + unpaired 1st row; punctures in the rows are closely placed, separated from each other by distances not more than their diameter. Each pair of puncture rows covered by uninterrupted stripe or series of closely placed rounded spots green, blue, or violet.

6(7) Elytral intervals covered by rather large and very dense punctures (distances between them, on the average, as wide as their diameter). Dorsum greenish bronze, elytra with coppery or violet spots. Length 8.7–8.9 mm (female). See also couplet 9. Figs. 4–6, 47, 48. Congo, Zambia, Tanzania (?).

Ch. spiloptera (Achard, 1926a)

7(6) Elytral intervals covered by small and sparse punctures (intervals between them, on the average, as wide as 3–4 their diameters) (Fig. 11). See also couplet 11. Figs. 17–24. Tanzania, Congo, Zaire.

Ch. katangana (Achard, 1924)

8(5) Elytral punctures arranged in 4 pairs of regular rows + unpaired 1st row; punctures in the rows are very sparse, separated from each other by distances much more than their diameter.

9(10) Elytral intervals covered by punctures rather large (only slightly less than punctures in rows) and very dense (separated by distances as wide as 1–2 diameters). Each violet spot includes one puncture from elytral row together with several nearby punctures. See also couplet 6. Figs. 4–6, 47, 48, 73, 74. Congo, Zambia, Tanzania (?).

Ch. spiloptera (Achard, 1926a)

10(9) Elytral intervals covered by punctures small (much smaller than punctures in rows) and sparse. Each violet spot includes only one puncture from elytral row.

11(12) Punctures in elytral rows as wide as 2–4 punctures in intervals and denser than in the following species (Fig. 12); besides that, elytra usually covered by microscopical punctules. Dorsum golden green, elytra with violet aureoles surrounding the large black punctures, or dorsum greenish bronze, elytra with large bluish black punctures. Length: 7.7 mm (male), 9.5 mm (female). See also couplet 7. Figs. 17–24. Tanzania, Congo, Zaire.

Ch. katangana (Achard, 1924)

12(11) Punctures in elytral rows as wide as 10 punctures in intervals and sparser than in the previous species (Fig. 8). Elytra lack of microscopical punctules. Dorsum shining, bronze, elytra with purple aureoles surrounding the large deep punctures. Length 6–9 mm. Fig. 67. Tanzania, Congo, Burundi.

Ch. ocelligera (Clavareau, 1909)

13(2) Hind wings absent.

14(15) Pronotum and elytra red or blackish purple, margined with golden, golden green, green or greenish blue stripe. Metasternum distinctly marginated anteriorly between mid-coxae. Figs. 34–38. Cameroon.
Ch. patriciae Daccordi, 1982c

15(14) Pronotum and elytra never red or blackish purple, margined with color stripe. Metasternum indistinctly marginated or immarginated anteriorly between mid-coxae.

16(17) Elytra unicolorous (Fig. 16). Metasternum immarginated anteriorly between mid-coxae. Dorsum entirely reddish-brown or green. See also couplet 18. Aedeagus – fig. 66. Congo, Rwanda, Uganda, Burundi.
Ch. ruandana (Weise, 1913)

17(16) Elytra with rounded color spots.

18(19) Elytral color spots small, rounded; each spot covers only single puncture (Fig. 9, 15). Metasternum immarginated anteriorly between mid-coxae. Dorsum: 1) bluish green with purple pronotal base and lateral sides, scutellum, and elytral base, and dark violet elytral spots; 2) purple with golden green lateral sides and posterior angles of pronotum, scutellum, and elytral base, and blue or violet elytral spots; 3) blue with elytral spots dark bronze; 4) red with elytral spots brown; 5) green with spots red; 6) red with greenish reflection and elytral spots brown or reddish violet; 7) head, pronotum, and scutellum green, elytra red with spots reddish violet. Length 6.7–7.4 mm (male), 6.8–7.4 mm (female). See also couplet 16. Aedeagus – fig. 66. Congo, Rwanda, Uganda, Burundi.
Ch. ruandana (Weise, 1913)

19(18) Elytral color spots wide, numerous, irregular, sometimes coalescent; each spot covers several punctures. Metasternum marginated anteriorly between mid-coxae.

20(21) Pronotal disc sericeous shining because of microscopical reticulation; disc covered by double punctures: very dense microscopical punctules (as large as cells of reticulation) and larger dense punctures. Head and pronotum golden red with greenish clypeus, orbites, anterior and posterior sides of pronotum; scutellum greenish blue; elytra dark purple with golden green rounded spots surrounding some punctures in paired rows and several nearby punctures in intervals. Length 5.8 mm (male), 6.5 mm (female). Figs. 3, 40–46. Cameroon.
Ch. masoni Daccordi, 1982c

21(20) Pronotal disc shining, devoid of microscopical reticulation.

22(23) Body smaller (5.1 mm long). Pronotal disc covered by homogeneous very dense microscopical punctules. Apical denticles of aedeagus visible from dorsal side. Dorsum violetish purple, head and pronotum with golden reflection, elytra with bluish green basal margin, suture, and rounded spots surrounding some punctures in paired rows and several nearby punctures in intervals, these bluish green spots narrowly margined with golden; scutellum golden green. Length 4.9 mm (male). Figs. 1, 49–56. Cameroon.
Ch. minuscula Daccordi, 1982c

23(22) Body larger (6.4 mm long). Pronotal disc covered by double punctures: very dense microscopical punctules and larger sparse punctures. Apical denticles of aedeagus invisible from dorsal side. Head, pronotum, and scutellum greenish blue, frons with golden red spot, orbites violet, labrum blue, elytra (including epipleura) golden red with violet suture and rounded spots surrounding some punctures in paired rows and several nearby punctures in intervals. Length 6.2 mm (male). Figs. 2, 57–64. Cameroon.

Ch. bertiae Daccordi, 1982c

24(1) Pygidium without longitudinal furrow.

25(30) Elytra with punctures dense, irregular, homogenous, medium-size or large.

26(27) Head and pronotal disc covered by very small punctures. Elytra bluish violet, bluish green, or green narrowly margined with purple from all sides. Length 6.2 mm (male), 7.3 mm (female). Figs. 25–27. Lesotho.

Ch. seenoi Daccordi, 1982c

27(26) Head and pronotal disc covered by large, deep punctures (visible to the naked eye). Elytra bronze or brown with bronze reflection. Length 7.6–11.2 mm.

28(29) Elytra brown with bronze reflection, shining; pronotum bronze, sericeous. Length 7.6 mm (male), 8.7 mm (female). Figs. 28–33. Gabon.

Ch. gabonensis (Vogel, 1870)

29(28) Elytra and pronotum bronze, sericeous. Length 10.5 mm (male), 11.2 mm (female). Figs. 14, 68. Angola.

Ch. murina Daccordi, 1982c

30(25) Elytra with puncturation double: 1) large, deep punctures arranged in 8 paired rows, 2) rather dense, irregular, medium-size punctures occupy intervals.

31(32) Pronotal disc covered by sparser, unevenly placed punctures. Elytra slightly opaque. Aedeagus deeply emarginated apically (Fig. 70). Dorsum dark bronze. Length 9.3 mm (male). Angola.

Ch. dogueti Daccordi, 1982c

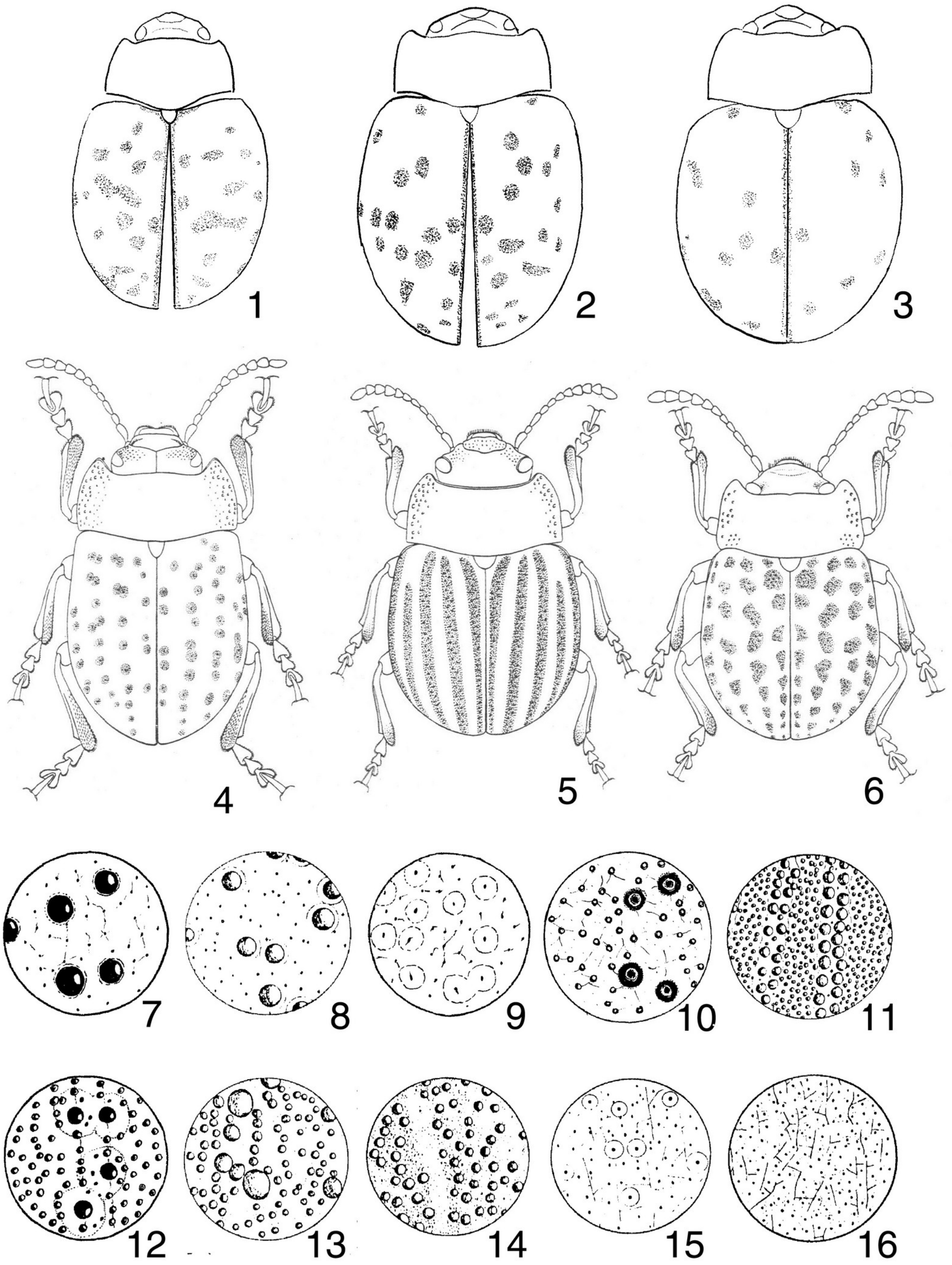
32(31) Pronotal disc covered by denser punctures. Elytra shining. Aedeagus shallowly emarginated apically (Figs. 69, 71, 72).

33(34) Elytral deep punctures smaller than in the following species (Fig. 10, 13). Aedeagus not constricted before apex (Figs. 71, 72). Dorsum golden coppery, dark greenish brown, or bronze. Length 8.5–12 mm. Angola.

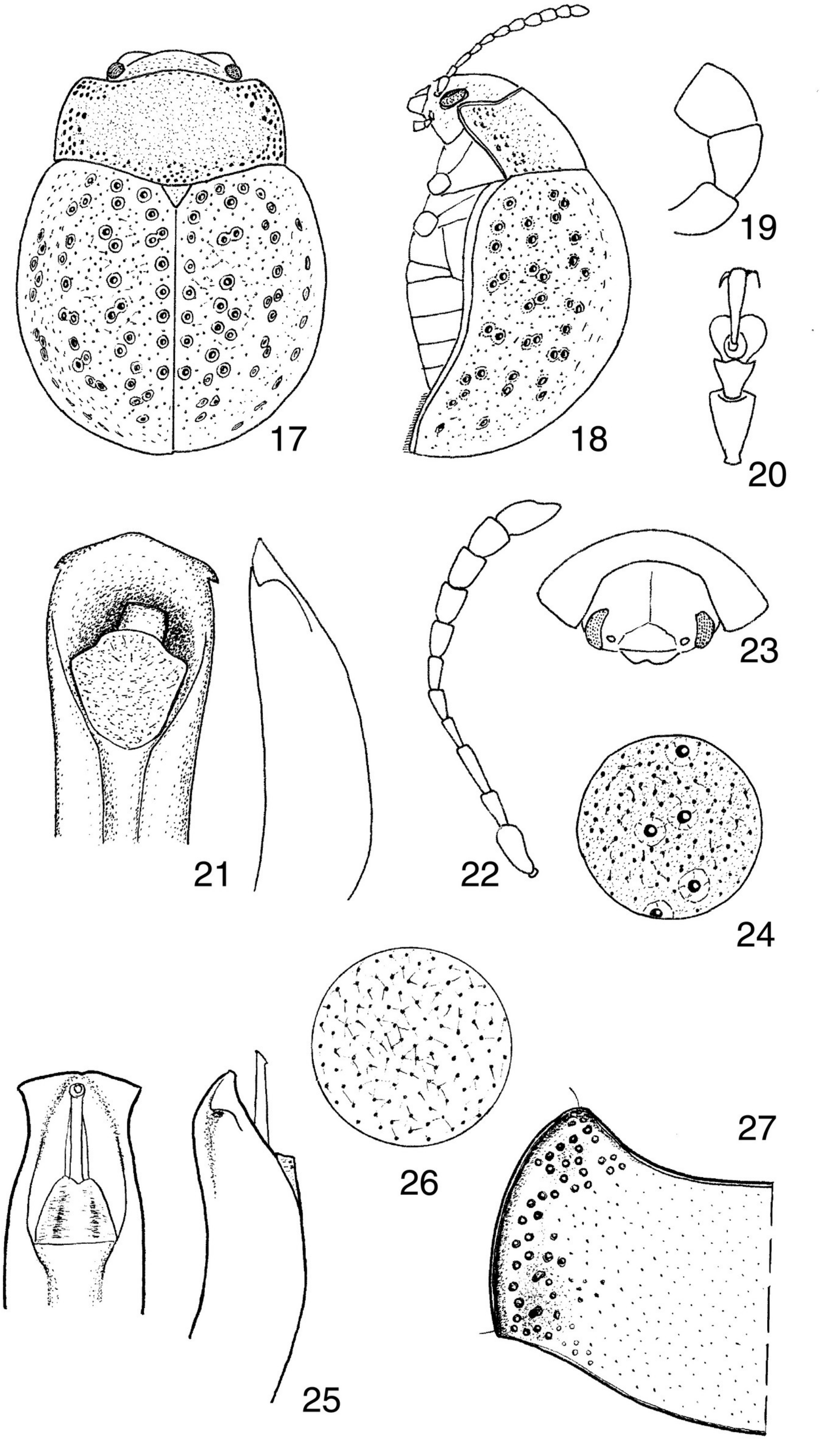
Ch. angolensis (Weise, 1917)

34(33) Elytral deep punctures much larger than in previous species. Aedeagus constricted laterally before apex (Fig. 69). Dorsum dark bronze with large deep elytral punctures much darker, almost black. Length 8.7 mm (male). Fig. 69. Angola.

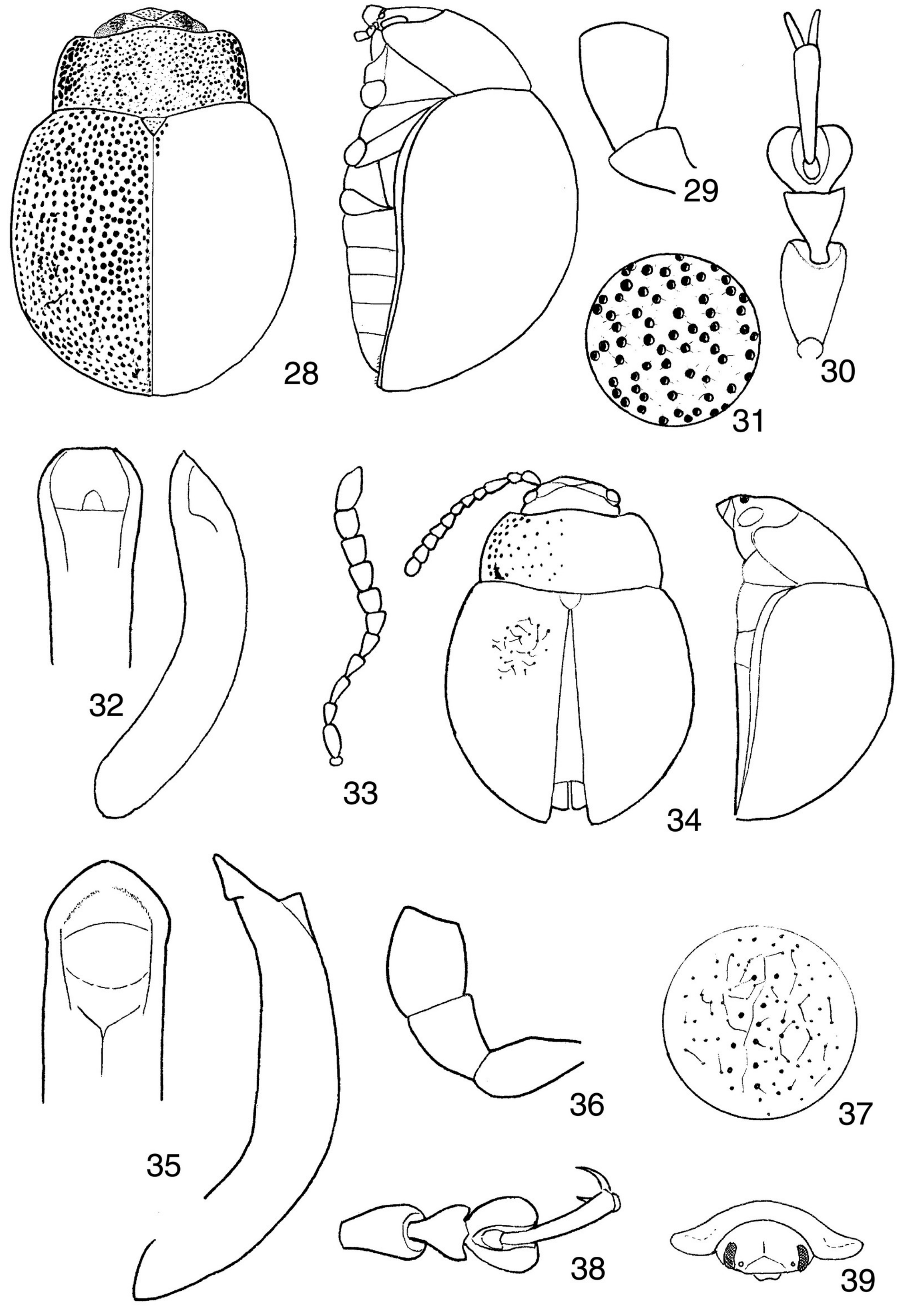
Ch. eldae Daccordi, 1982c



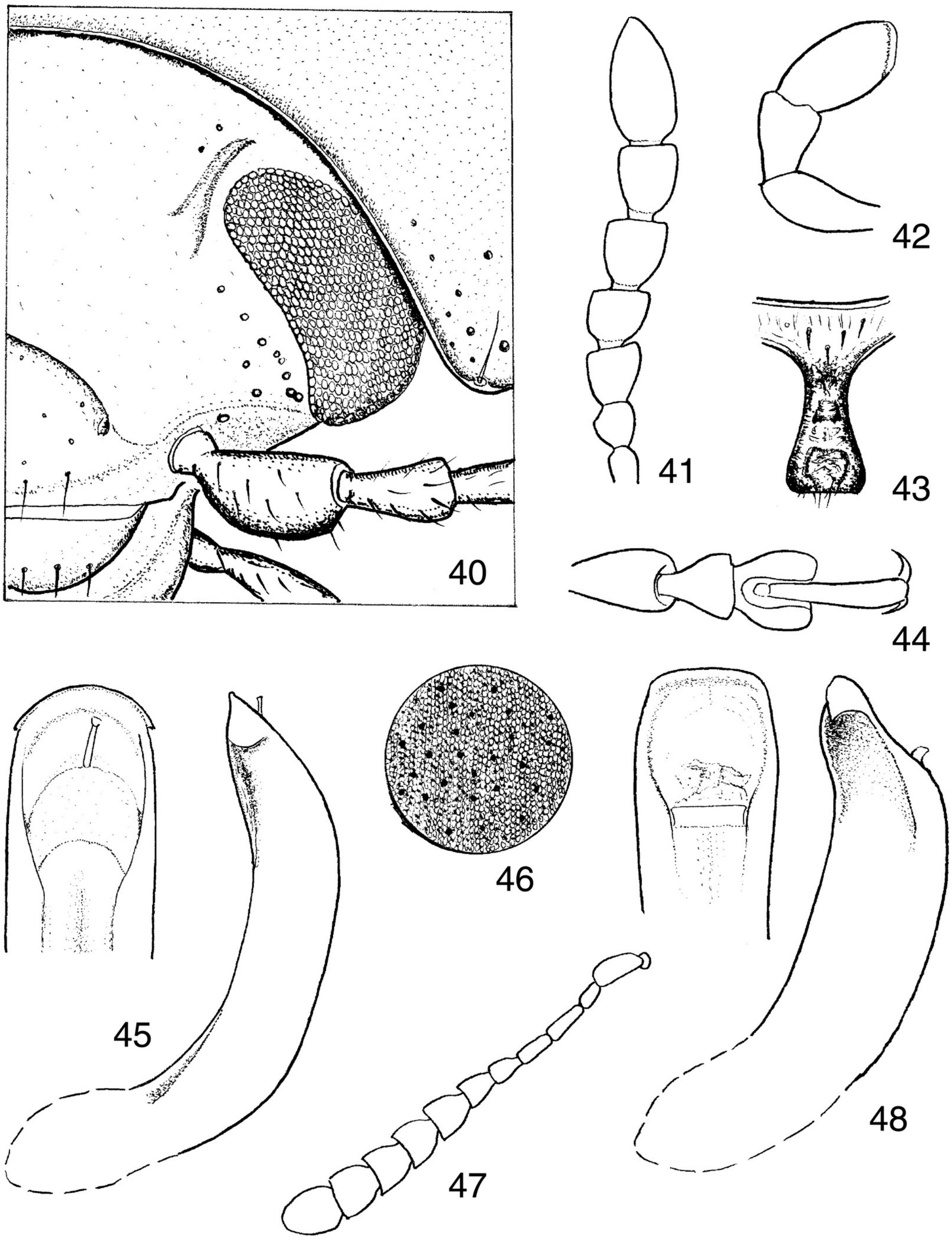
***Ghesquiereita* figures 1–16:** 1–6 – dorsal view: 1 – *Chrysolina munuscula* (holotype, Cameroon), 2 – *Ch. bertiae* (holotype, Cameroon), 3 – *Ch. masoni* (holotype, Cameroon), 4 – *Ch. spiloptera* (Congo), 5–6 – *Ch. spiloptera* (5 – *Ch. upembae*, type, Zambia; 6 – *Ch. straeleni*, holotype, Congo); 7–16 – relief of elytron: 7 – *Ch.* (*Centoptera*) *metallica* (S Africa), 8 – *Ch. ocelligera*, 9 – *Ch. ruandana* (Congo), 10 – *Ch. angolensis* (Angola), 11–12 – *Ch. katangana* (Congo), 13 – *Ch. angolensis* (Angola), 14 – *Ch. murina* (Angola), 15–16 – *Ch. ruandana*. (After: Jolivet, 1952: 4–6; Daccordi, 1982c: 8, 11, 13–16; others – orig.)



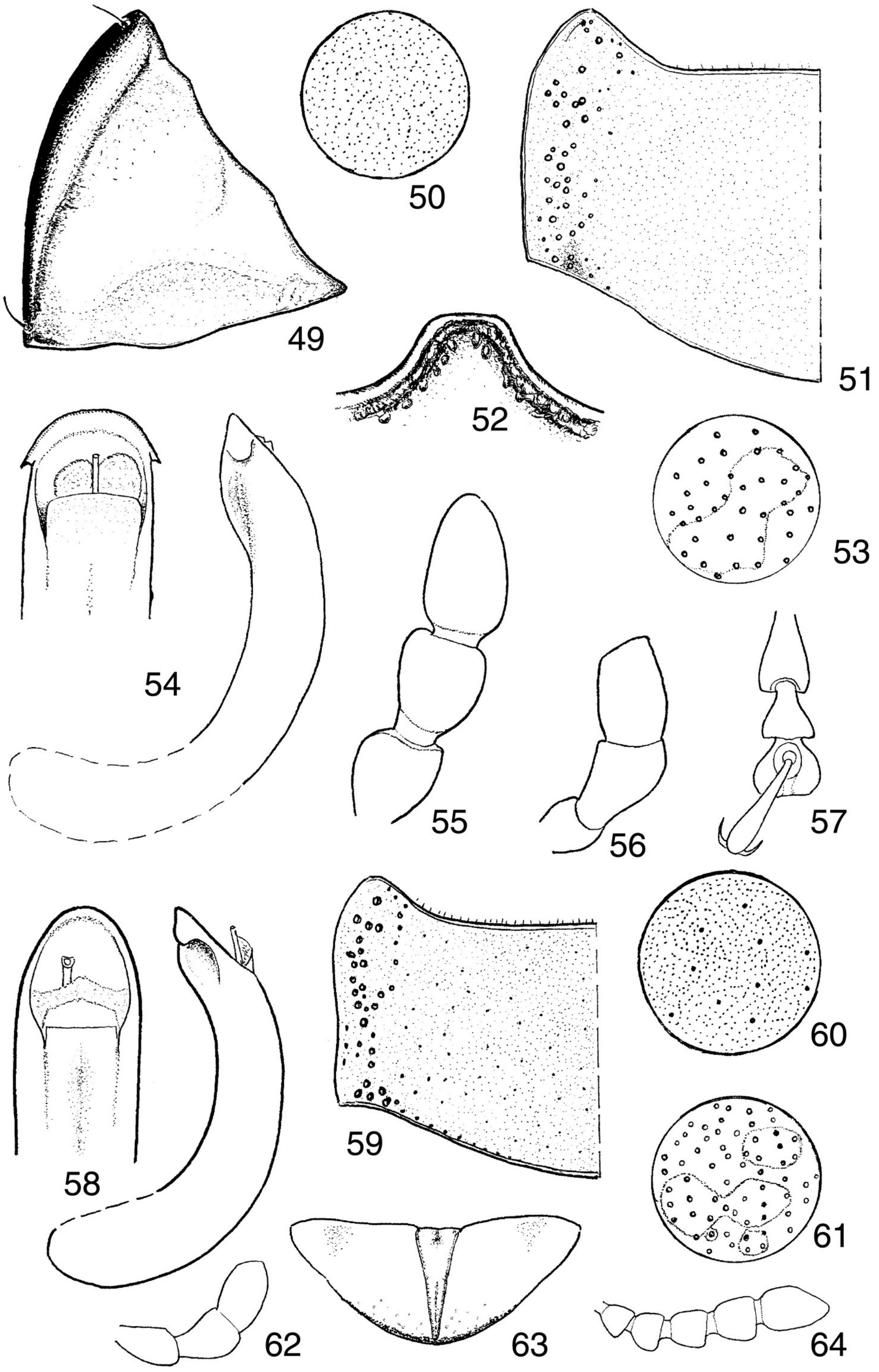
***Ghesquiereita* figures 17–27:** 17–24 – *Chrysolina katangana*, male (Zaire): 17–18 – dorsal and lateral view, 19 – maxillary palpus, 20 – fore-tarsus, 21 – aedeagus, dorsal and lateral view, 22 – antenna, 23 – head and pronotum, frontal view, 24 – relief of elytron; 25–27 – *Ch. seenoi*, male (holotype, Lesotho): 25 – aedeagus, dorsal and lateral view, 26 – relief of elytron, 27 – pronotum. (Orig.)



Ghesquiereita **figures 28–39:** 28–33 – *Chrysolina gabonensis*: 28–31, 33 – female (syntype): 28 – dorsal and lateral view, 29 – maxillary palpus, 30 – mid-tarsus, 31 – elytral relief, 33 – antenna, 32 – male, aedeagus, dorsal and lateral view; 34–38 – *Ch. patriciae*, male (paratype, Cameroon): 34 – dorsal and lateral view, 35 – aedeagus, dorsal and lateral view, 36 – maxillary palpus, 37 – elytral relief, 38 – fore-tarsus; 39 – *Ch.* (*Centoptera*) *metallica*, head and pronotum, frontal view. (After: Daccordi, 1982c: 32; others – orig.)

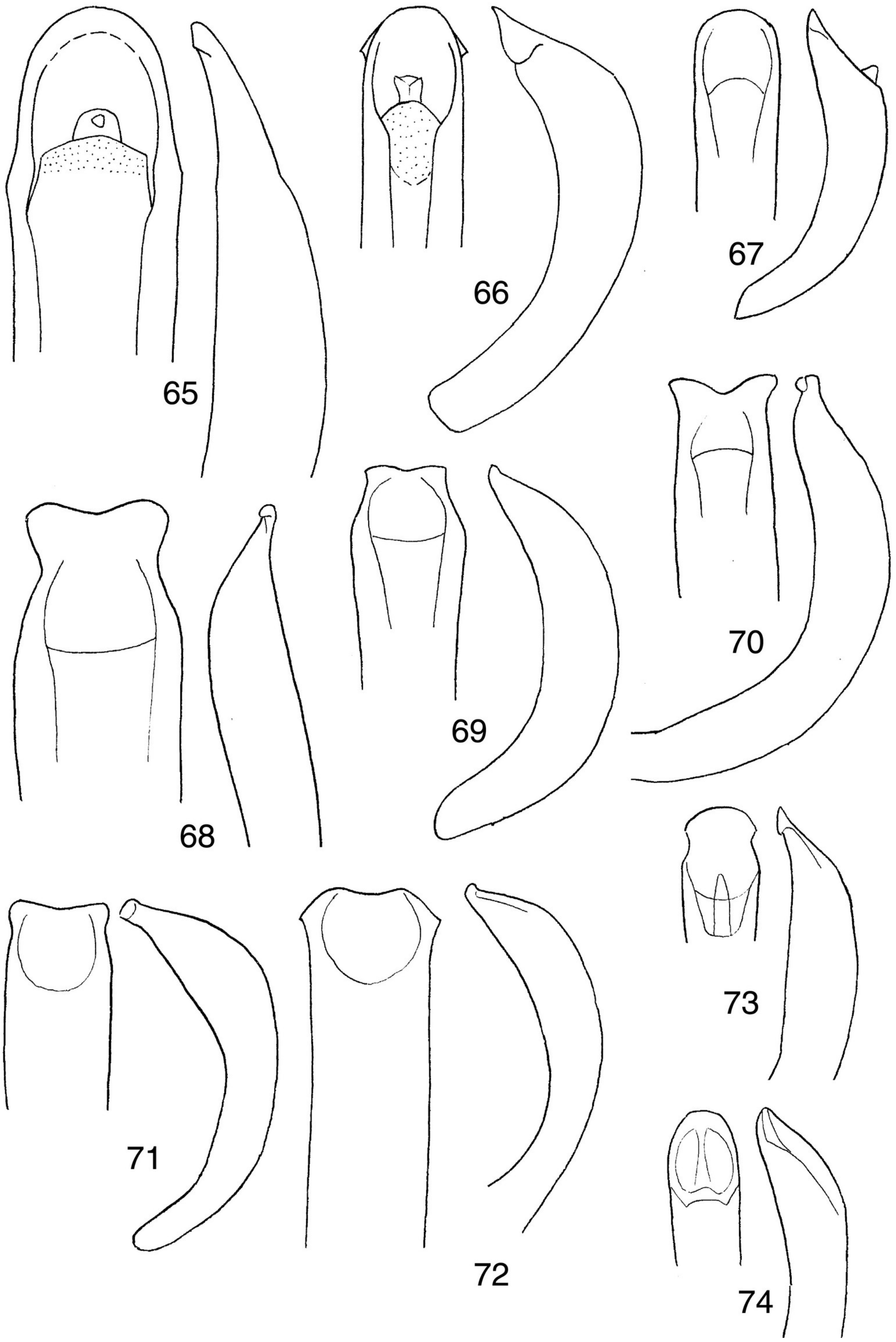


***Ghesquiereita* figures 40–48:** 40–46 – *Chrysolina masoni*, male (holotype, Cameroon): 40 – head, 41 – antenna, 42 – maxillary palpus, 43 – intercoxal prosternal process, 44 – fore-tarsus, 45 – aedeagus, dorsal and lateral view, 46 – pronotal relief; 47–48 – *Ch. spiloptera* (Congo): 47 – female, antenna, 48 – male, aedeagus, dorsal and lateral view. (Orig.)



***Ghesquiereita* figures 49–64:** 49–56 – *Chrysolina minuscula*, male (holotype, Cameroon): 49 – prothoracic hypomeron, 50 – prothoracic relief, 51 – pronotum, 52 – anterior margin of metasternum, 53 – elytral relief, 54 – aedeagus, dorsal and lateral view, 55 – 9–11th antennomeres, 56 – maxillary palpus; 57–64 – *Ch. bertiae*, male (holotype, Cameroon): 57 – fore-tarsus, 58 – aedeagus, dorsal and lateral view, 59 – pronotum, 60 – pronotal relief, 61 –

elytral relief, 62 – maxillary palpus, 63 – pygidium, 64 – 7–11th antennomeres. (Orig.)



Ghesquiereita **figures 65–74:** *Chrysolina*, aedeagus, dorsal and lateral view: 65 – *Ch.* (*Centoptera*) *metallica* (S Africa), 66 – *Ch. ruandana* (Rwanda), 67 – *Ch. ocelligera* (holotype, Tanzania), 68 – *Ch. murina* (holotype, Angola), 69 – *Ch. eldae* (holotype, Angola), 70 – *Ch. dogueti* (holotype, Angola), 71 – *Ch. angolensis* (Angola), 72 – *Ch. angolensis* (*Ch. monardi*, type, Angola), 73–74 – *Ch. spiloptera* (73 – *Ch. upembae*, holotype, Zambia, 74 – *Ch. straeleni*, holotype, Congo). (After: Daccordi, 1982c: 67–71; Bechyné, 1948a: 72; Jolivet, 1952: 73–74; others – orig.)

Subgenus *Gnathomela* Jacobson, 1895

Diagnosis

Body elongate, weakly convex. Dorsum unicolorous, black, moderately shining or dull.

Last maxillary palpomere similar in both sexes, narrow, elongate, slightly narrower than penultimate one.

Antenna inserted much closer to clypeus than to eye, narrow.

Pronotum broadest before mid-length or near mid-length, slightly to moderately swollen laterally along entire length, with lateral impression broad, shallow to obsolete. Pronotal disc covered by sparse moderately large punctures or by dense double puncturation: moderately large and fine punctures. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore present.

Prothoracic hypomeron weakly convex, laterally wrinkled; without lateral border or with weak border. Basal fold distinct to strong. Intercoxal prosternal process with rough surface, flat or weakly longitudinally impressed, covered by large punctures with wrinkled intervals.

Metasternum entirely marginated anteriorly.

Elytron without humeral callus. Elytral puncturation moderately large and distinctly arranged in paired rows or double (moderately large and fine punctures), dense, mostly irregular, with irregular puncture rows or only short traces of the rows.

Elytral epipleura inclined outside, visible along entire length in lateral view, ciliate near apex.

Hind wings absent.

Tarsomeres 1–3: male: 1) with entire sole in most species, or 2) all tarsomeres 1, mid- and hind-tarsomeres 2 with broad glabrous stripe beneath (in *Ch. glasunovi*), others with entire sole; female: all tarsomeres 1 with glabrous sole narrowly margined with setae, all tarsomeres 2 with glabrous stripe beneath, all tarsomeres 3 with entire sole in most species, or with glabrous stripe beneath in *Ch. igorlopatini*. Claw tarsomere without denticles beneath.

Pygidium with longitudinal impression along entire length.

Last abdominal sternite similar in both sexes, evenly convex, with apical margin broadly truncate.

Aedeagus oval or flattened in cross-section, moderately to strongly curved, with apex different (obtuse, or pointed, or bearing lamella), without apical denticles, with flagellum exposed, narrow, whip-shaped in most species (except *Ch. igorlopatini*).

Differential diagnosis

This Central Asian endemician subgenus is characterized by a combination of the following features: body elongate, wingless, black, without humeral calli, with pronotal impression broad shallow to obsolete, with last maxillary palpomere slightly narrower than penultimate one, with female 1st tarsomeres with glabrous sole narrowly margined by setae. *Gnathomela)* species externally looks like some members of *Chrysolina* (*Bittotaenia)*, especially *Ch.* (*B.) grata* and *Ch.* (*B.) turanica*, and differs in the absence of hind wings and absence of distinct narrow lateral furrows along entire length of pronotum. The single member of the subgenus *Ch.* (*Pseudocrosita)*, namely *Ch. bactriana,* differs from *Ch.* (*Gnathomela)* in pronotum very convex, swollen (in frontal and lateral view), and in presence of reduced, narrow, but long hind wings reaching pygidium.

Key to species and subspecies

1(4) Pronotal disc sparsely and unevenly punctured, with interspaces much broader than diameter of punctures.

2(3) Elytral punctures arranged in distinct paired regular rows, with interval between rows 1 and 2 includes several punctures almost as large as punctures in the rows, and other intervals impunctate. Pronotal lateral impression very shallow, broad. Aedeagus roundly broadened apically with very tip short triangular. Length: male: 10.0 mm (holotype), 9.2 mm (topotype), female: 10.8 mm (paratype). Figs. 1–9. S Uzbekistan.
Ch. igorlopatini Kippenberg, 2010

3(2) Elytral punctures mostly irregular, with 4 interrupted puncture rows visible in anterior ½ near suture. Pronotal lateral impression absent. Aedeagus hardly broadened from base to apex, apically triangularly narrowed. Length: 10.5 mm (male, holotype). Fig. 24. Kyrgyzstan.
Ch. ovczinnikovi (Lopatin, 1990a)

4(1) Pronotal disc more densely punctured; puncturation distinctly double: large punctures unevenly placed with interspaces densely finely punctate.

5(8) Apex of aedeagus broadly obtusely truncate, without distinct lamella or triangular thinning.

6(7) Elytral puncturation very dense, double (large and small punctures), with puncture rows hardly visible. Apical part of aedeagus (from the base of apical opening to the tip) longer than in the next species, with lateral sides rectilinearly or roundly convergent. Length: 9.5–10.5 mm (male), 9.8–12.2 mm (female). Fig. 20. S Kazakhstan, Uzbekistan.
Ch. valida (Lopatin, 1972)

7(6) Elytral puncturation less dense, simple (punctures almost similar in size), with puncture rows visible along entire length among irregular puncturation. Apical part of aedeagus (from the base of apical opening to the tip) shorter than in the previous species, with lateral sides almost parallel. Length: 10.8 mm (topotype, male), 13 mm (holotype, female). Figs. 16–19. Uzbekistan.
Ch. glasunovi (Bechyné, 1962)

8(5) Apex of aedeagus with distinct lamella or triangular thinning.

9(10) Apex of aedeagus with very short lamella. Length: 9.2 mm (holotype, male), 9.3 mm (paratype, female). Figs. 10–13. Uzbekistan.
Ch. mutica (Lopatin, 1972)

10(9) Apex of aedeagus different.

11(14) Apex of aedeagus triangular.

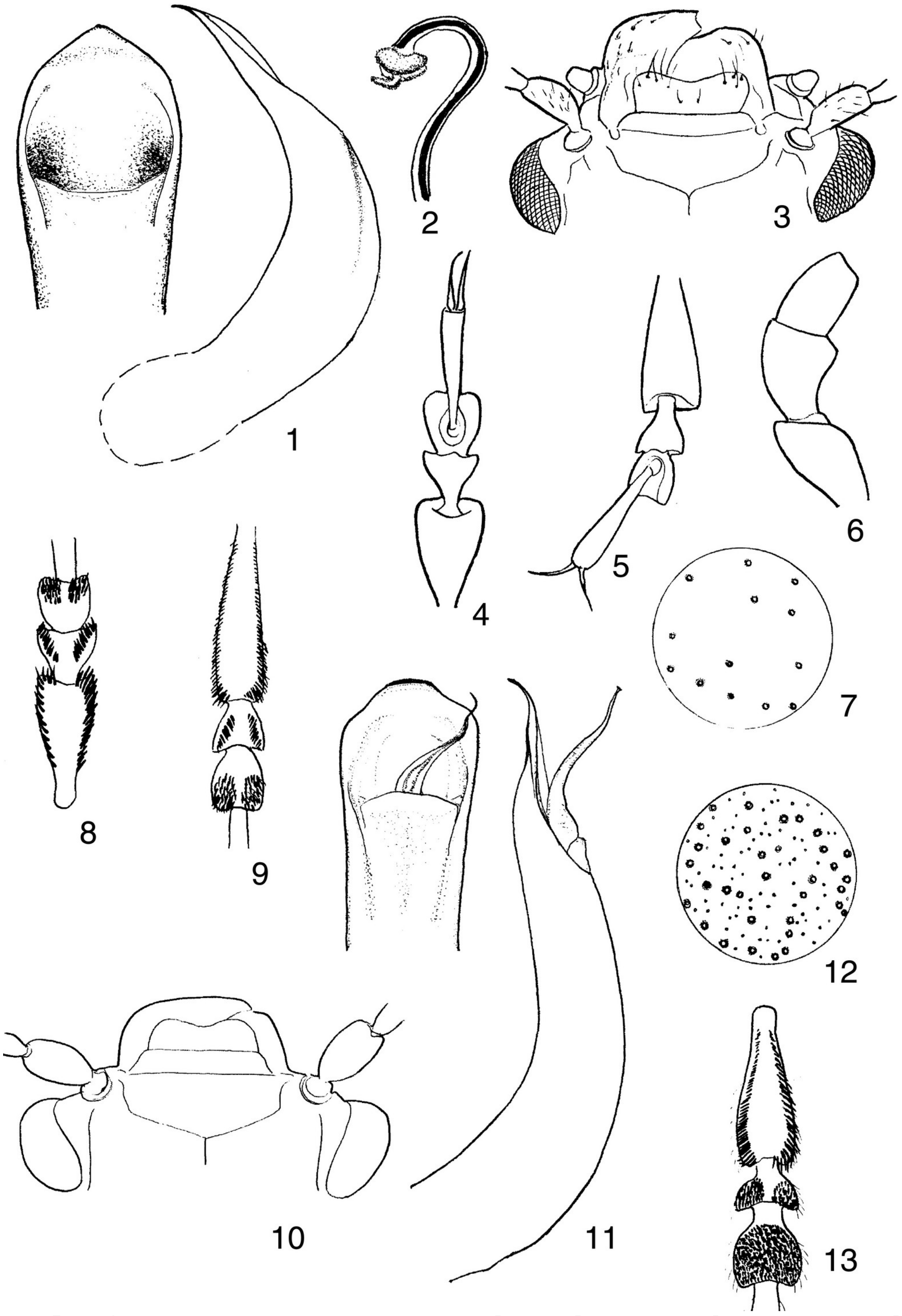
12(13) Apical part of aedeagus (from the base of apical opening to the tip) not separated with a bend from the rest part, with very tip hardly curved downwards ventrally. Length: 10 mm (lectotype, male), 12 mm (paralectotype, female). Figs. 23, 25, 26. Uzbekistan, N-W Tajikistan.
Ch. dolens (Kraatz, 1885)

13(12) Apical part of aedeagus (from the base of apical opening to the tip) separated with a bend from the rest part, with very tip more curved downwards ventrally. Length: 8.0–9.3 mm (male), 9.5–10.2 mm (female). Fig. 22. Uzbekistan, Tajikistan.
Ch. praestans (Lopatin, 1972)

14(11) Apex of aedeagus with distinct lamella.

15(16) Apical lamella of aedeagus shorter. Length: 8.8 mm (holotype, male), 9.5 mm (paratype, female). Figs. 14, 15. Uzbekistan, Kyrgyzstan.
Ch. laevigata laevigata (Lopatin, 1972)

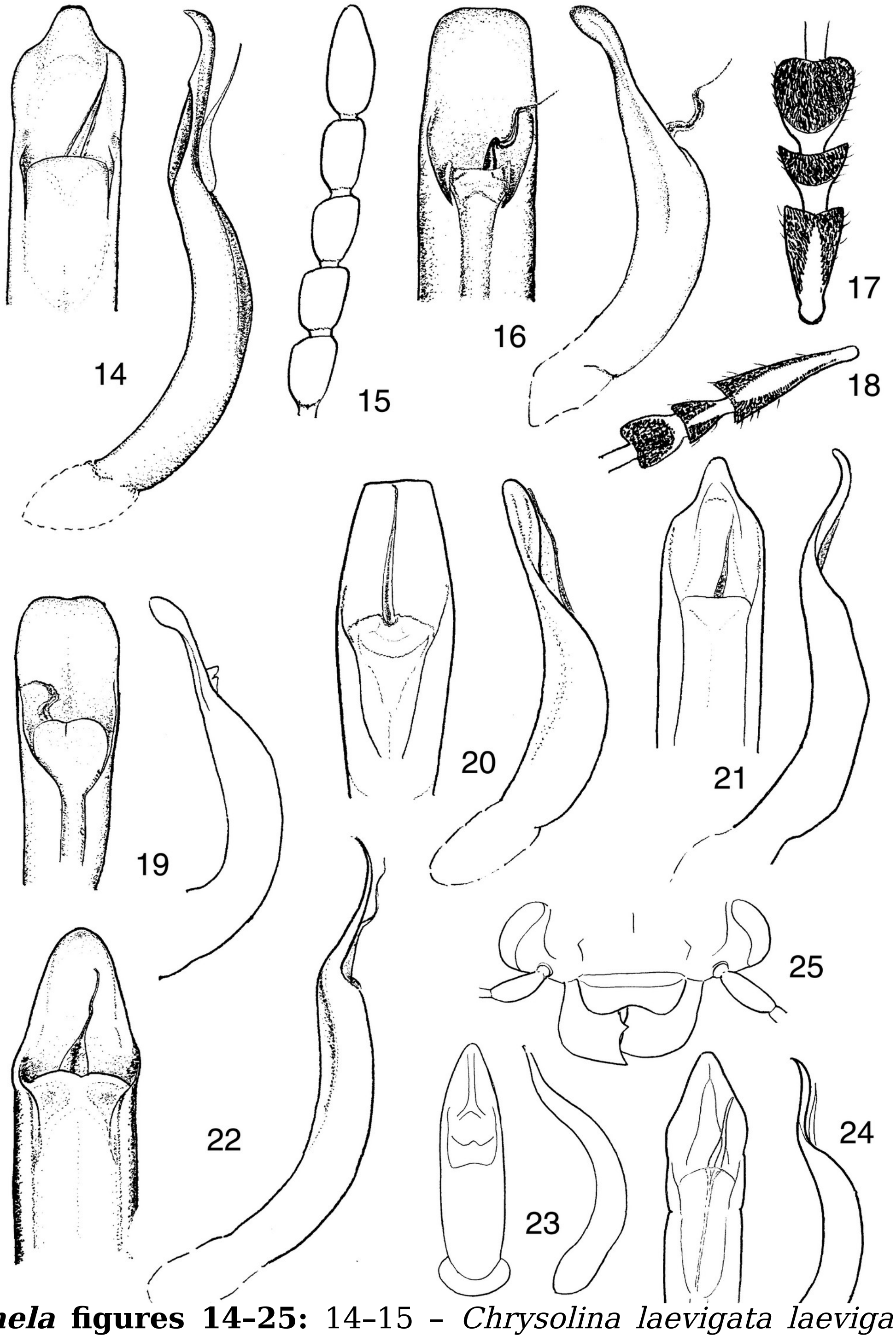
16(15) Apical lamella of aedeagus longer. Length: male: 9.4 mm (holotype), 9.5 mm (non-type spec.) Fig. 21. Kyrgyzstan.
Ch. laevigata kirghizica (Lopatin, 1990a)



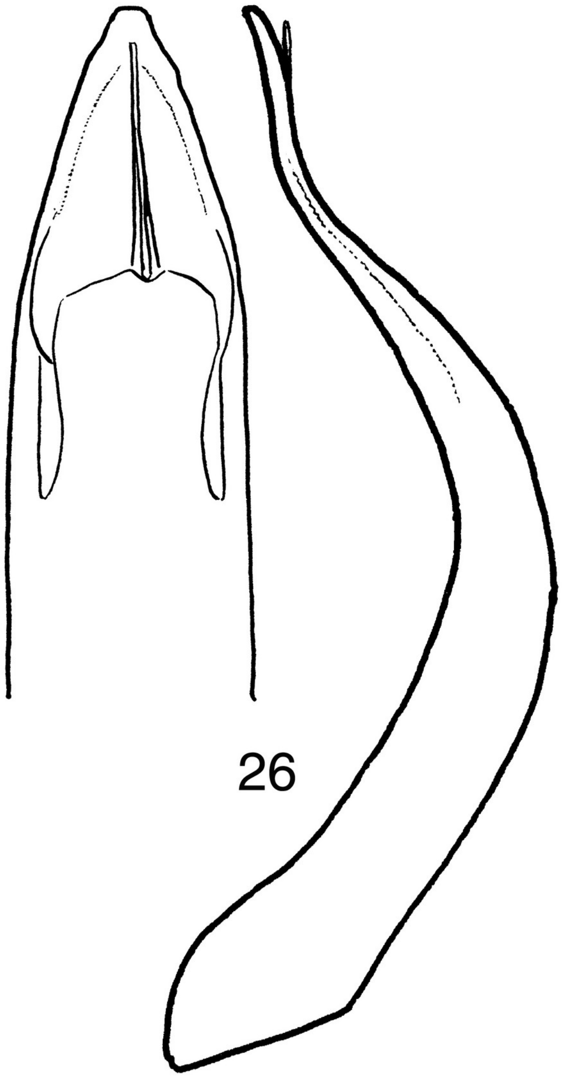
***Gnathomela* figures 1–13:** 1–9 – *Chrysolina igorlopatini* (Uzbekistan, Boysuntov ridge): 1–7 – male: 1 – aedeagus, dorsal and lateral view, 2 – flagellum of aedeagus, 3 – head, 4 – fore-tarsus, 5 – hind-tarsus, 6 – maxillary palpus, 7 – pronotal relief (1, 3– 5, 7 – *Gnathomela meridionalis*, holotype; 2, 6 – topotype), 8–9 – female (*G. meridionalis*, paratype): 8 – fore-tarsus, 9 – hind-tarsus; 10–13 – *Ch. mutica*: 10–12 – male (holotype, Uzbekistan, Ugam ridge):

Gnathomela

10 – head, 11 – aedeagus, dorsal and lateral view, 12 – pronotal relief, 13 – female (paratype, Uzbekistan, Pskem Mts.), hind-tarsus. (Orig.)



***Gnathomela* figures 14–25:** 14–15 – *Chrysolina laevigata laevigata* (male, holotype, Uzbekistan, Kurama ridge): 14 – aedeagus, dorsal and lateral view, 15 – 7–11th antennomeres; 16–18 – *Ch. glasunovi* (male, topotype, Uzbekistan,Nuratau ridge): 16 – aedeagus, dorsal and lateral view, 17 – fore-tarsus, 18 – hind-tarsus; 19–24 – male, aedeagus, dorsal and lateral view: 19 – *Ch. glasunovi* (holotype *Gnathomela valida nuratavica*, Uzbekistan, Nuratau ridge), 20 – *Ch. valida* (Kazakhstan), 21 – *Ch. laevigata kirghizica* (Kyrgyzstan, Kungei-Ala-Too), 22 – *Ch. praestans* (topotype, Uzbekistan, Chatkal Range), 23 – *Ch. dolens* (lectotype, Uzbekistan, Samarkand), 24 – *Ch. ovczinnikovi* (holotype, Kyrgyzstan, Ferghanskiy ridge); 25 – *Ch. dolens* (female, topotype, Uzbekistan, Samarkand), head. (After: Lopatin, 1972: 23; others – orig.)



***Gnathomela* figure 26:** *Chrysolina dolens* (holotype *Lobodera chrysomeliformis*, Tajikistan: Zeravshan range), aedeagus, dorsal and lateral view. (Orig.)

Subgenus *Heliostola* Motschulsky, 1860a

Diagnosis

Dorsum mostly unicolorous, black with weak metallic (blue, green, violet, bronze) reflection, rarely pronotum and elytra slightly differing in color.

Last maxillary palpomere similar in both sexes, broadly oval, obliquely truncate, similar to penultimate one in length and width.

Antenna inserted closer to clypeus than to eye, narrow.

Pronotum broadest basally or near mid-length, or with almost parallel lateral sides along most of its length, swollen laterally along entire length, with lateral impression deep to shallow posteriorly and shallow to obsolete (or absent) anteriorly. Pronotal disc covered by dense, moderately large to fine punctures. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore absent.

Prothoracic hypomeron almost flat (in *Ch. schneideri*) or weakly convex (in others), laterally with irregular wrinkles; without outer border. Basal fold strong (in *Ch. schneideri*), or weak (in others). Intercoxal prosternal process flat (in *Ch. schneideri*) or longitudinally impressed (in others).

Metasternum entirely thickly marginated anteriorly.

Elytron without humeral callus. Elytral puncturation homogenous, entirely irregular.

Elytral epipleura inclined outside, visible along entire length in lateral view, ciliate near apex.

Hind wings absent.

Tarsomeres 1–3 with entire sole; moderately broad in both sexes, in male slightly broader than in female. Claw tarsomere without denticles beneath.

Pygidium with longitudinal impression in basal ½ only.

Last abdominal sternite evenly weakly convex, with apical margin broadly truncate (or very slightly broadly emarginated) in male, rounded in female.

Aedeagus narrow, oval in cross-section, moderately evenly curved or undulate in lateral view, rounded, triangular, or trapeziform apically, without apical denticles, with flagellum narrow, whip-shaped, exposed.

Differential diagnosis

Heliostola members differs from *Ch.* (s.str.) *rufa* in elytral punctures subequal-size, irregular throughout, from the subgenus *Timarchida* in elytral epipleura bearing setae apically. The members of the subgenus *Heliostola,* especially *Ch.* (*H.*) *carpathica*, look like *Ch.* (*Sphaeromela*) *varians* and *Ch.* (*Colaphosoma*) *sturmi* and differ from them in the absence of hind wings. Also, they look like *Ch.* (*Crositops*) members but much smaller in size, and pygidium without impression in apical part. Subgenus *Heliostola* differs from subgenus *Sibiriella* in elytral puncturation entirely confuse, without even traces of longitudinal rows, and male tarsomeres 1–3 not so broad.

Key to species (and subspecies of *Ch. carpathica*)

Species of the subgenus *Heliostola* are rather close externally. Examination of male aedeagus is necessary for the precise identification.

1(2) Pronotal lateral sides usually almost straight and parallel for most of their length, and roundly convergent near anterior corners (Fig. 11). Dorsum bluish black or violetish black, weakly shining. Aedeagus undulate in lateral view (Fig. 10). Length 5.6–7.0 mm. Figs. 10–12. E Sudetes, Beskides, Tatry.
Ch. schneideri (Weise, 1882)

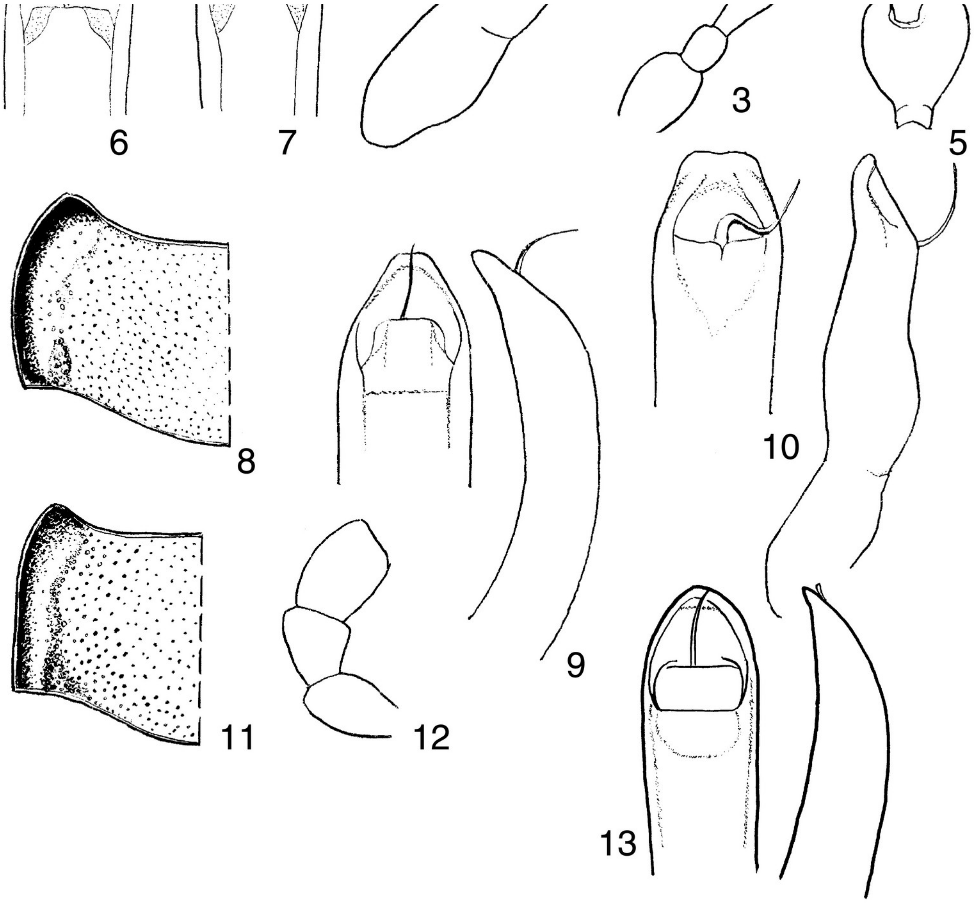
2(1) Pronotal lateral sides usually rounded (Figs. 1, 8), if they almost straight for most of their length, then they convergent forward and not parallel. Aedeagus arc-shaped in lateral view (Figs. 2, 9, 13).

3(4) Pronotum usually broadest near mid-length, with lateral impressions distinct along entire length. Aedeagus with apical margin narrowly bent down. Dorsum blackish green, olive green, bronze, blackish violet, or blackish blue, mostly weakly shining, rarely pronotum or elytra dull. Length 5.5–7.5 mm. There are 4 valid subspecies inhabiting different parts of the specific area. Figs. 7–9, 13. European mountains.
Ch. lichenis (Richter, 1820)

4(3) Pronotum usually broadest basally, with lateral sides rounded or straight, with lateral impressions shallower than in *Ch. lichenis* posteriorly and weak to absent anteriorly. Aedeagus with apical margin broadly bent down. Dorsum usually dull (at least, in female).

5(6) Pronotal lateral impression absent anteriorly. Aedeagus rounded apically. Dorsum black with weak greenish or bluish reflection. Length 6.5–6.6 mm. Figs. 1–5. E Carpathians (part), S Carpathians.
Ch. carpathica carpathica (Fuss, 1856)

6(5) Pronotal lateral impression weak but present anteriorly. Aedeagus triangular or trapezoidal apically (Fig. 6). Dorsum black with weak bluish or violet reflection. Length 6.0–6.7 mm. W Carpathians, E Carpathians (part).
Ch. carpathica gabrieli (Weise, 1903)



***Heliostola* figures 1–13:** 1–5 – *Chrysolina carpathica carpathica*, male (syntype, Transylvania): 1 – pronotum, 2 – aedeagus, dorsal and lateral view, 3 – antenna, 4 – maxillary palpus, 5 – fore-tarsus; 6 – *Ch. carpathica gabrieli*, male (Tatry Mts.), aedeagus, dorsal view, apical margin marked with arrow; 7 – *Ch. lichenis lichenis*, male (W Carphatians), aedeagus, dorsal view, apical margin marked with arrow; 8–9 – *Ch. lichenis ahena*, male (topotype, Styria): 8 – pronotum, 9 – aedeagus, dorsal and lateral view; 10–12 – *Ch. schneideri*, male (topotype, Tatry Mts.): 10 – aedeagus, dorsal and lateral view, 11 – pronotum, 12 – maxillary palpus; 13 – *Ch. lichenis rhipaea*, male (syntype *Ch. lichenis suturalis*, Ukraine), aedeagus, dorsal and lateral view. (Orig.)

Subgenus *Hypericia* Bedel, 1899

Diagnosis

Dorsum metallic (bronze, violet, coppery, green, blue, bluish violet, greenish bronze, bronze brown) or black with or without metallic tinge, unicolorous, or elytra and head+pronotum differently colored, with punctures in elytral rows sometimes black margined with bronze aureole.

Last maxillary palpomere similar in both sexes, oval or cylindrical, obliquely truncate apically, as long as penultimate one or 1.2–1.5 X longer than latter, as wide as penultimate one or 1.1–1.2 X wider than latter.

Antenna inserted at middle between clypeus and eye, or 1.1–1.8 X closer to clypeus than to eye, or 1.3 X closer to eye than to clypeus; narrow.

Pronotum broadest basally, weakly to strongly swollen laterally along entire length, with narrow lateral furrow deep to shallow in basal ¼–⅓, besides that with broad shallow to obsolete lateral impression covered by few or numerous punctures, which stronger than discal punctures, or with punctures only, anteriorly. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore present.

Prothoracic hypomeron longitudinally weakly to rather convex, laterally with impression covered by transverse wrinkles or with glabrous furrow, without lateral border. Basal fold strong. Intercoxal prosternal process with weak to distinct impression along entire length or only apically.

Metasternum entirely marginated anteriorly.

Elytron with weak to distinct humeral callus; with abbreviated scutellar row and 9 entire, mostly paired rows of moderately large to coarse punctures, which densely or sparsely placed; all rows regular, or only 9th and 10th irregular; intervals between elytral puncture rows flat, covered by more or less dense minute or moderately large punctures.

Elytral epipleura inclined outside, visible along entire length in lateral view, densely ciliate near apex in the most species, with only few very short setae or mostly devoid of setae in *Ch. didymata*.

Hind wings developed.

Tarsomeres 1–3 with entire sole in both sexes; in male narrow, or slightly to strongly dilated, in female narrow. Claw tarsomere without denticles beneath.

Pygidium with longitudinal groove at entire length or except near apex.

Last abdominal sternite evenly convex in both sexes, more convex in female, or with median impression in male.

Aedeagus narrow, rounded or oval in cross-section, moderately evenly curved in lateral view, almost parallel-sided or roundly broadened at sides of apical opening (or before it). Apical margin rounded, or triangular, or bearing long projection. Flagellum different: 1) narrow, simple in the species with aedeagus bearing apical projection, 2) apically broadened, complicated in the species with aedeagus rounded or triangular apically.

Differential diagnosis

The subgenus *Hypericia* is well characterized by the combination of the following characters: 1) pronotum laterally with short narrow impression (furrow) near base; with broad shallow to obsolete impression covered by few or numerous punctures, or without impression anteriorly; 2) aedeagus narrow, tube-shaped; 3) pygidium with longitudinal groove along entire length or except near apex; 4) tarsomeres 1–3 with entire sole in both sexes; 5) elytra with regular paired puncture rows; 6) dorsum entirely metallic; 7) hind wings developed.

Key to species and subspecies

Some members of the subgenus *Hypericia*, on the one hand, are very variable externally, and on the other hand, rather close morphologically to each other. Examination of male aedeagus is necessary for the precise identification.

1(6) Lateral furrow at pronotal base very shallow to obsolete, sometimes replaced by shallow and short longitudinal impression filled with punctures (Fig. 38).

2(5) Punctures at pronotal disc usually as large as those at elytral intervals between puncture rows or larger. Male last abdominal sternite with narrow impression along apical margin. Aedeagus spoon-shaped apically.

3(4) Dorsum mostly blue or bluish violet, rarely (in some specimens from Turkey and Rhodes Isl.) green or olivaceous coppery. 5th elytral row consists of 13–25 punctures. Aedeagus less broadened apically (Figs. 2, 3). Length 5.9–6.5 mm. Fig. 38. Europe (up to W Ukraine eastward), Turkey, Rhodes Isl., Armenia, W Turkmenistan, N Iran, Syria, Lebanon.
Ch. didymata (Scriba, 1791)

4(3) Dorsum coppery or olivaceous coppery. 5th elytral row consists of 11–14 punctures. Aedeagus more broadened apically (Fig. 4). Length 5.5–6.5 mm. Israel, Syria (?).
Ch. syriaca (Weise, 1884a)

5(2) Punctures at pronotal disc usually smaller than those at elytral intervals between puncture rows. Male last abdominal sternite with narrow impression along apical margin. Aedeagus with narrow flat projection apically.

Ch. hyperici (Forster, 1771)
(some specimens from Ukraine, Crimea, European Russia,
Caucasus, Turkey, and Iran occurring together with typical form)
(see also couplet 12)

6(1) Lateral furrow at pronotal base more deep.

7(16) 5th puncture row at elytron consists of 9–18 (rarely more, to 20 in *Ch. quadrigemina* only) punctures.

8(11) Aedeagus without apical projection, with apical margin rounded. Flagellum complicated apically, with apical plate broadened at the end. Tarsomeres 1–3 much broader in male than in female.

9(10) Dorsum more or less shining, mostly bright metallic: green, blue, violet, golden green, or coppery, with elytral regular punctures dark (black) margined with coppery aureole. Male last abdominal sternite with large shallow semicircular impression. Length 5.7–7.2 mm. Figs. 11, 12, 17, 25, 41. W Europe, Azerbaijan (?), N Africa, Near East, introduced: Australia, New Zealand, N and S America.

Ch. quadrigemina (Suffrian, 1851)

10(9) Dorsum dull, black with weak violet reflection, with head and pronotum partly (or mostly) dark green or dark blue. Male last abdominal sternite with narrow impression along apical margin. Length 6.7–7.6 mm. Fig. 7. Turkey, Bulgaria.

Ch. anatolica (Dahlgren, 1984)

11(8) Aedeagus with narrow flat projection apically. Flagellum narrow, simple.

12(13) Dorsum weakly shining or dull, greenish coppery, green, blue, violet, black, large punctures in elytral rows often black margined with coppery aureole. Tarsomeres 1–3 much broader in male than in female. Male last abdominal sternite with narrow impression along apical margin. Length 5.6–6.9 mm. Figs. 24, 36. Species from Europe, N Africa, Caucasus, Asia Minor, Iran, introduced: N America, Australia.

Ch. hyperici (Forster, 1771) (see also couplet 5)

13(12) Dorsum shining, tarsomeres 1–3 narrow in both sexes. Species from China, Taiwan, N Vietnam.

14(15) Pronotum strongly rounded laterally. Dorsum blue, bluish violet, or bronze. Male last abdominal sternite slightly convex, with narrow impression along apical margin. Length 5.6–6.3 mm. Figs. 35, 39. S China, Taiwan, N Vietnam.

Ch. gracilis Bechyné, 1950a

15(14) Pronotum weakly rounded laterally. Dorsum bronze-brown with weak greenish reflection or dark bronze, very shining (especially elytra). Male last abdominal sternite slightly convex. Length 6.0–6.5 mm. Figs. 43–45. S-E China.

Ch. fricata Bechyné, 1950a

16(7) 5th puncture row at elytron consists of 19–32 punctures (rarely less, to 16 punctures in *Ch. cuprina* only).

17(24) Aedeagus without apical projection, with apical margin rounded or triangular. Flagellum complicated apically. Species from Europe, Asia Minor, Caucasus, Iran, S Urals.

18(19) Aedeagus with apical margin triangular. Dorsum shining, usually bicolor: 1) head and pronotum golden green, elytra coppery, 2) head green, pronotum and elytra purple, 3) head bluish green, pronotum golden with purple tint, elytra purple, 4) head bluish green, pronotum green, elytra golden green. Male last abdominal sternite with narrow impression along apical margin and with large shallow impression in apical ½ or without it. Length 5.6–6.1 mm. Figs. 8–10. N and C parts of W Europe.

Ch. brunsvicensis (Gravenhorst, 1807)

19(18) Aedeagus with apical margin rounded.

20(21) Lateral sides of pronotum evenly rounded. 9th puncture row on elytron consists of 20–29 punctures. Male last abdominal sternite with large impression and with deeper narrow furrow along apical margin. Apical plate of flagellum narrowed at the end. Lateral elytral rows paired: 6th with 7th, 8th with 9th. Dorsum unicolorous: green, blue, bronze, coppery, purple, violet, black, or dorsum bicolor: pronotum blue and elytra green, coppery or violet, pronotum coppery and elytra green. Length 6.0–8.0 mm. Figs. 5, 6, 13, 16, 22, 37, 42, 46. Europe, Caucasus, Iran, S Urals.

Ch. cuprina (Duftschmid, 1825)

21(20) Lateral sides of pronotum nearly straight, at least in basal ½. 9th puncture row on elytron consists of 24–34 punctures. Male last abdominal sternite with large deep impression.

22(23) Dorsum dull, especially elytra, rarely shining, mostly violet or purplish violet, rarely blue, bronze or black. Pronotum laterally rounded in apical ½. Flagellum of aedeagus forming "H"-like plate apically. Length 6.2–7.2 mm. Figs. 18, 21, 26. Asia Minor, Europe.

Ch. geminata (Paykull, 1799)

23(22) Dorsum shining, coppery, violet, green, blue, or green with bronze or blue tint, or bicolor: head and pronotum green, elytra bronze. Pronotum laterally almost straight, and rounded only near anterior angles. Flagellum of aedeagus forming "X"-like plate apically. Length 7.1–7.6 mm. Figs. 19, 20. Italy, Corfu, Greece, Sicily.

Ch. corcyria (Suffrian, 1851)

24(17) Aedeagus with narrow flat projection apically. Species from E Kazakhstan, Siberia, Far East, Mongolia, China, Korea, Japan, N Vietnam.

25(28) Apical projection of aedeagus without lateral denticles. Flagellum narrow, simple.

26(27) Elytral intervals between puncture rows covered with punctures dense and larger than in the following species. Pronotal disc with dense, distinct punctures. Apical projection of aedeagus narrow (looks like that in *Ch. hyperici*). Dorsum violet, purplish violet, blackish violet, blackish bronze, bronze, blackish blue. Male last abdominal sternite medially depressed.

Length 5.5–8.0 mm. Figs. 23, 28–30, 32–34. E Kazakhstan, S Siberia, E Mongolia, N-E China, S Far East, Korea, Japan.

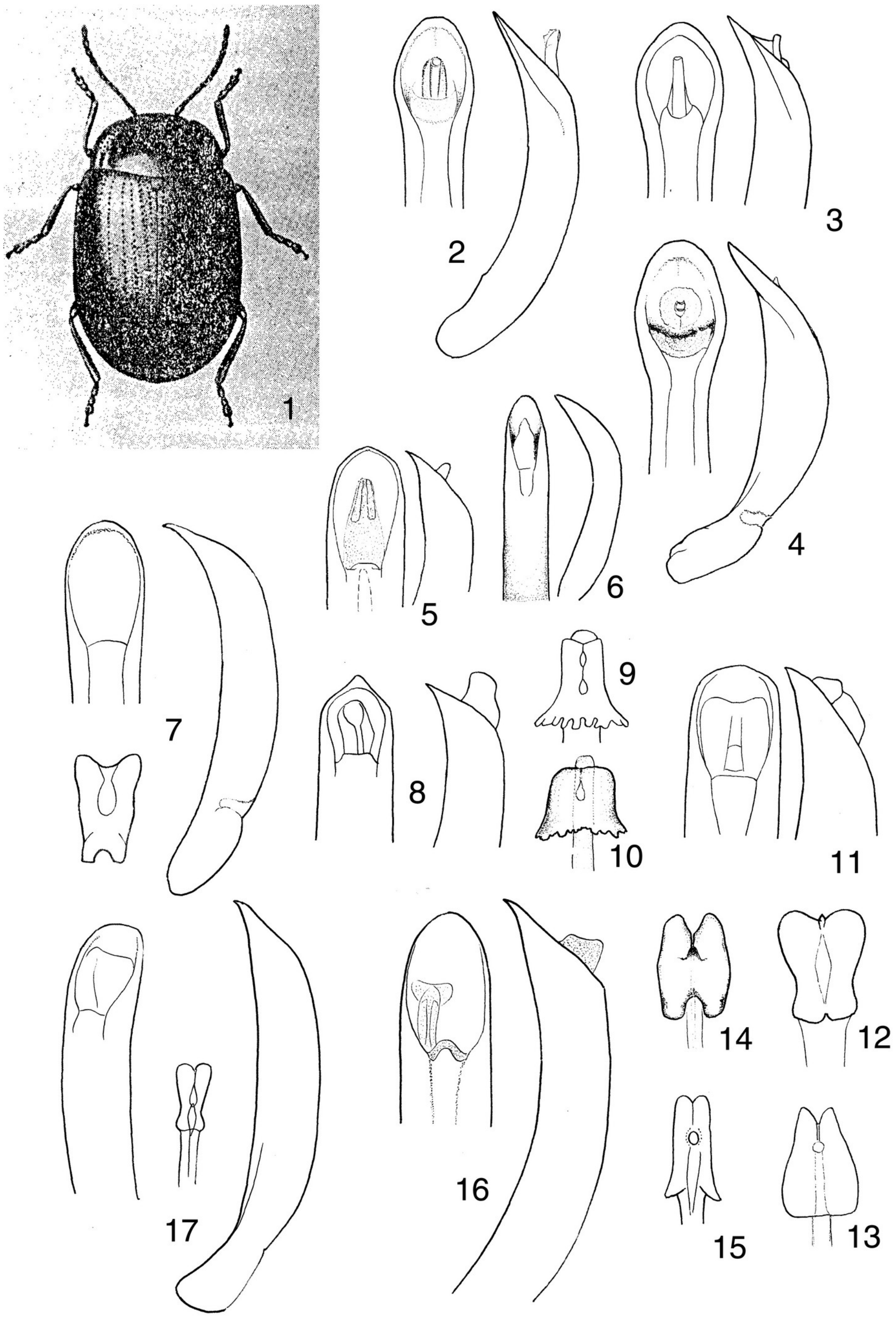
Ch. difficilis (Motschulsky, 1860a)

27(26) Elytral intervals between puncture rows covered with punctures sparse and fine. Pronotal disc with punctures very fine, looks like impunctate. Apical projection of aedeagus broad, rounded. Dorsum blue, violet, blackish blue, black with brassy tint. Male last abdominal sternite medially depressed. Length 5.3–6.5 mm. Figs. 1, 31, 40. China, Taiwan, Japan, N Vietnam.

Ch. nikkoensis (Jacoby, 1885)

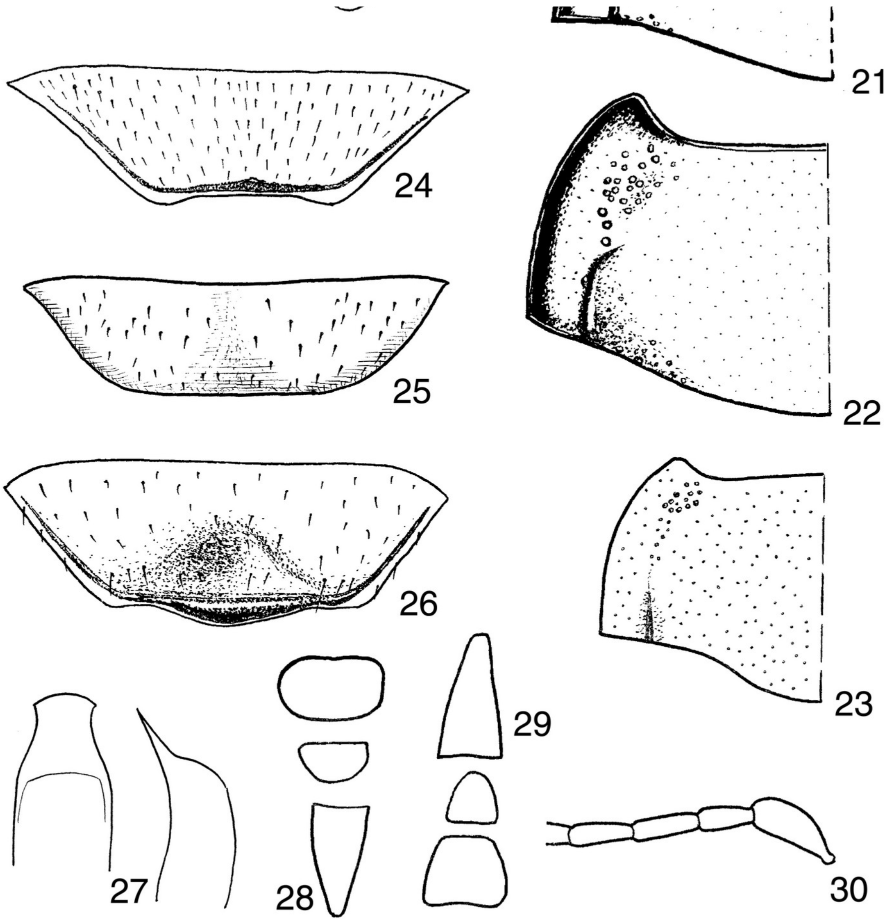
28(25) Apical projection of aedeagus with lateral denticles. Dorsum purplish blue, shining. Elytral intervals between puncture rows covered with punctures sparse and fine. Pronotal disc looks like impunctate. Length 5.0 mm. Fig. 27. S-W China.

Ch. medogana Chen et Wang in: Wang, Chen, 1981

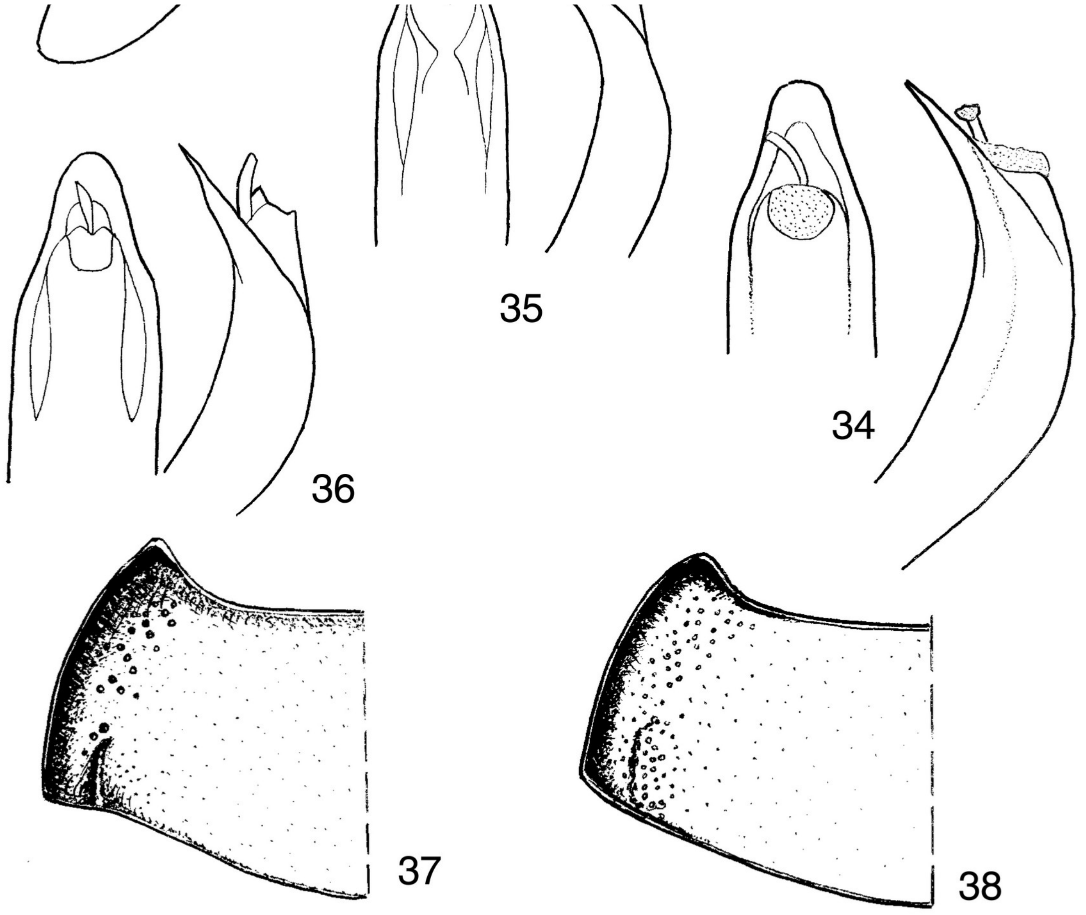


***Hypericia* figures 1–17:** 1 – *Chrysolina nikkoensis* (*Ch. ohoi*, type, Taiwan Isl.), total view; 2–6 – aedeagus, dorsal and lateral view: 2 – *Ch. didymata* (Montenegro), 3 – *Ch. didymata* (Turkey), 4 – *Ch. syriaca* (syntype, Israel: Haifa), 5 – *Ch. cuprina* (S Urals), 6 – *Ch. cuprina* (*Ch. cuprina staneki*, syntype, Turkey); 7 – *Ch. anatolica* (Turkey), aedeagus, dorsal and lateral view, flagellum; 8 – *Ch. brunsvicensis* (Germany), aedeagus, dorsal and lateral view; 9–10 – *Ch. brunsvicensis*, flagellum (9 – after Dahlgren, 1984, 10 – Germany); 11–12 – *Ch. quadrigemina*: 11 – aedeagus, dorsal and lateral view (Corsica), 12 – flagellum (Australia); 13–16 – *Ch. cuprina*: 13–15 – flagellum (13 – S Urals, 14 – Austria, 15 – after Dahlgren, 1984), 16 – aedeagus, dorsal and lateral view (Poland); 17 – *Ch. quadrigemina* (lectotype, Germany:

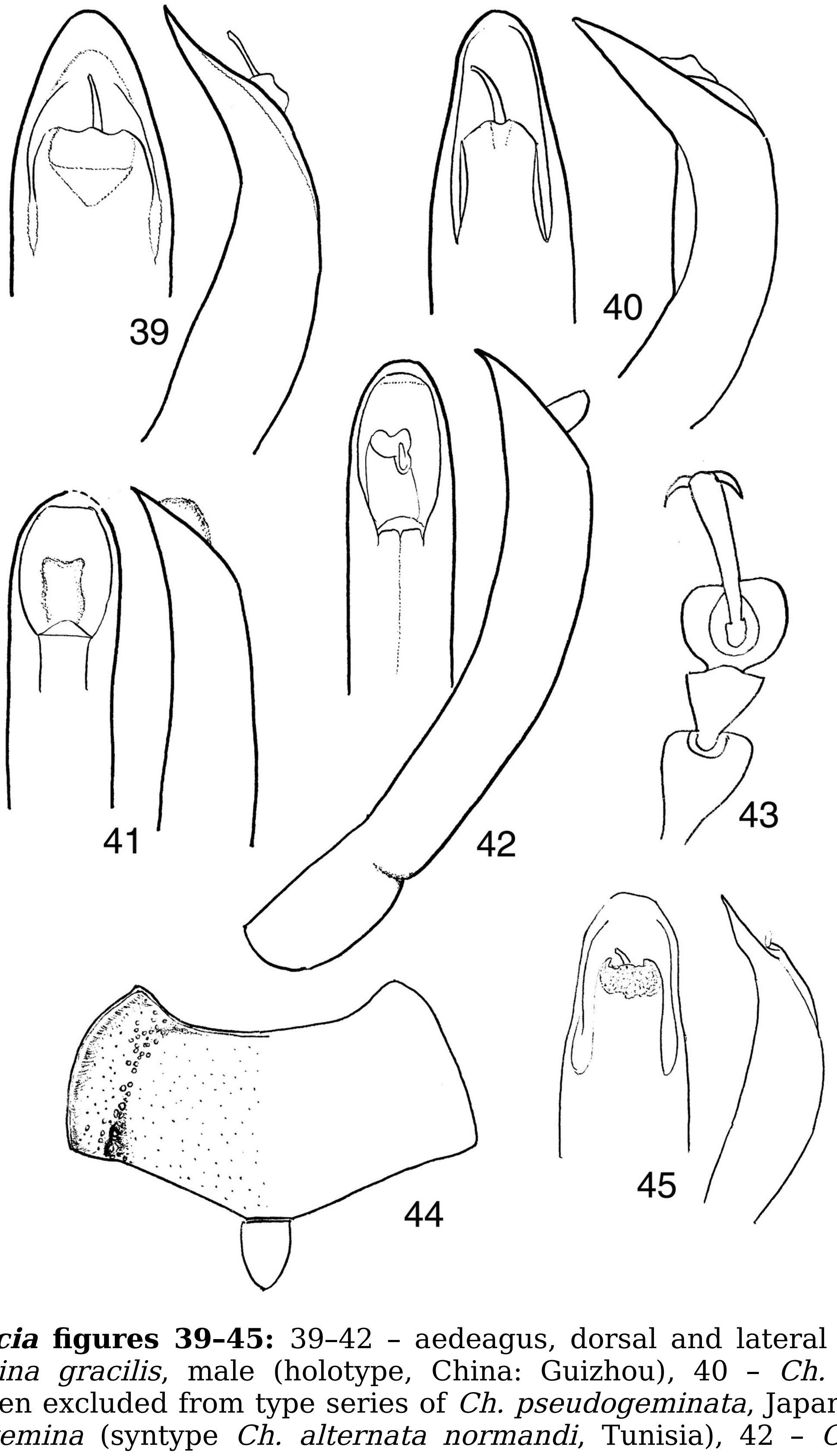
Elberfeld), aedeagus, dorsal and lateral view, flagellum. (After: Chûjô, 1958: 1; Bechyné, 1949b: 6; Dahlgren, 1984: 9, 15; others orig.)



Hypericia **figures 18–30:** 18–19 – aedeagus, dorsal and lateral view, flagellum: 18 – *Chrysolina geminata* (European Russia), 19 – *Ch. corcyria* (aedeagus – Italy, flagellum – Greece); 20–23 – pronotum: 20 – *Ch. corcyria* (Italy), 21 – *Ch. geminata* (European Russia), 22 – *Ch. cuprina* (S Urals), 23 – *Ch. difficilis* (lectotype *Ch. nikinoja*, Korea); 24–26 – male last abdominal sternite: 24 – *Ch. hyperici* (Caucasus: Abkhazia), 25 – *Ch. quadrigemina* (lectotype, Germany), 26 – *Ch. geminata* (European Russia); 27 – *Ch. medogana* (holotype, China: Xizang); 28–30 – *Ch. difficilis* (lectotype *Ch. nikinoja*): 28–29 – fore- and hind-tarsomeres 1–3, sole, 30 – antennomeres 1–4. (Orig.)

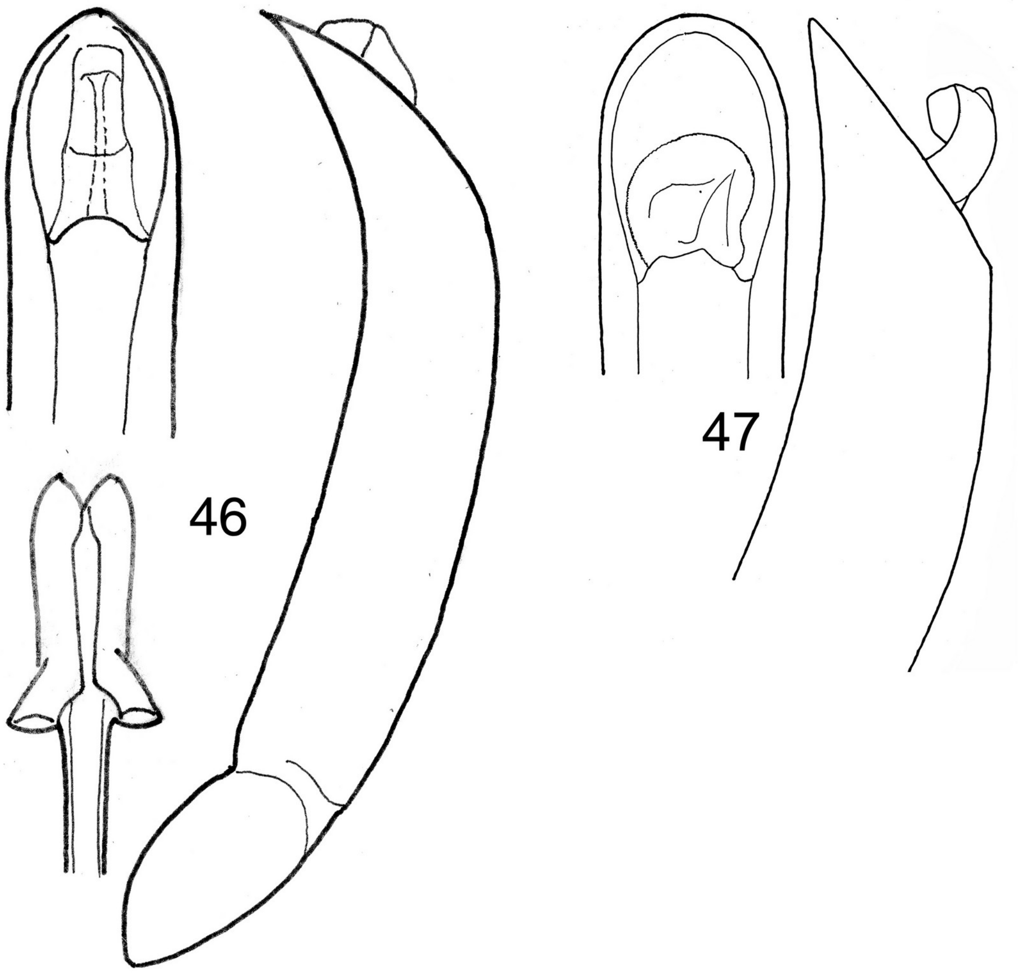


***Hypericia* figures 31–38:** *Chrysolina*, aedeagus, dorsal and lateral view: 31 – *Ch. nikkoensis* (Japan: Honshu), 32 – *Ch. difficilis* (Siberia: Altai Mts.), 33 – *Ch. difficilis* (lectotype *Ch. nikinoja nikinoja*, Korea), 34 – *Ch. difficilis* (lectotype *Ch. nikinoja exgeminata*, N-E China), 35 – *Ch. gracilis* (China: Sichuan), 36 – *Ch. hyperici* (E Turkey); 37–38 – pronotum: 37 – *Ch. cuprina* (syntype *Ch. daghestanica*, Caucasus: Dagestan), 38 – *Ch. didymata* (W Ukraine: Kamenets-Podolski). (Orig.)



***Hypericia* figures 39–45:** 39–42 – aedeagus, dorsal and lateral view: 39 – *Chrysolina gracilis*, male (holotype, China: Guizhou), 40 – *Ch. nikkoensis* (specimen excluded from type series of *Ch. pseudogeminata*, Japan), 41 – *Ch. quadrigemina* (syntype *Ch. alternata normandi*, Tunisia), 42 – *Ch. cuprina* (syntype *Ch. cuprina staneki*, Turkey); 43–45 – *Ch. fricata*, male (syntype, S-E

China): 43 – fore-tarsus, 44 – pronotum, 45 – aedeagus, dorsal and lateral view. (Orig.)



***Hypericia* figures 46–47:** 46 – *Chrysolina cuprina*, male (neotype, Austria), aedeagus, dorsal and lateral view, flagellum, ventral view, 47 – *Ch. quadrigemina* (syntype *Ch. alternata conversaria*, Switzerland), aedeagus, dorsal and lateral view. (Orig.)

Subgenus *Hypochalcoidea* Bourdonné, 2012

Diagnosis

Dorsum dark bronze or black with bronze, coppery or greenish reflection, rarely dark blue; legs piceous with bronze reflection, antennae piceous with basal antennomeres paler.

Last maxillary palpomere hardly broader in male than in female; broadly cylindrical or oval, almost as broad as long, obliquely truncate apically, 1.4–1.5 X longer than palpomere 3, as broad (or hardly broader) as latter.

Antenna inserted 1.1–1.8 X closer to clypeus than to eye; narrow.

Pronotum broadest basally or near mid-length, with rather swollen lateral calli along entire length, with lateral furrow narrow and moderately deep in basal ⅓, shallow and broader anteriorly, covered with dense, large and partly coalescent punctures along entire length. Anterior side of pronotum marginated and densely ciliate. Anterior setiferous pore present.

Prothoracic hypomeron longitudinally convex, laterally slightly impressed and covered by transverse wrinkles, without lateral border. Basal fold distinct. Intercoxal prosternal process flat and covered with large setiferous punctures.

Metasternum entirely marginated anteriorly.

Elytron without humeral callus; with abbreviated scutellar row and 9 entire rows, which are regular or undulate, or partly irregular, placed at equal distances from each other or slightly paired. Punctures in rows moderately large, dense, numerous; rows sometimes hardly traced among dense punctures covering intervals. Intervals between elytral puncture rows flat or hardly elevated, covered by dense fine punctures.

Elytral epipleura inclined outside, visible along entire length in lateral view, ciliate near apex.

Hind wings narrow, with reduced venation, reaching base of pygidium.

Tarsomeres 1–3: in female with broad glabrous stripe on tarsomere 1, with narrow glabrous stripe on tarsomeres 2–3 in all tarsi; in male: wholly pubescent beneath. Male tarsomeres 1–3 narrow, slightly broader than in female. Claw tarsomere narrow, long (as long as tarsomere 1), without denticles beneath.

Pygidium with distinct longitudinal sulcus along entire length.

Last abdominal sternite evenly slightly convex in both sexes, apically marginated.

Aedeagus narrow, oval in cross-section, evenly curved viewed laterally. Apex triangular or bottle-shaped, with 2 longitudinal ventro-lateral impressions before apex. Flagellum simple, thin, exposed.

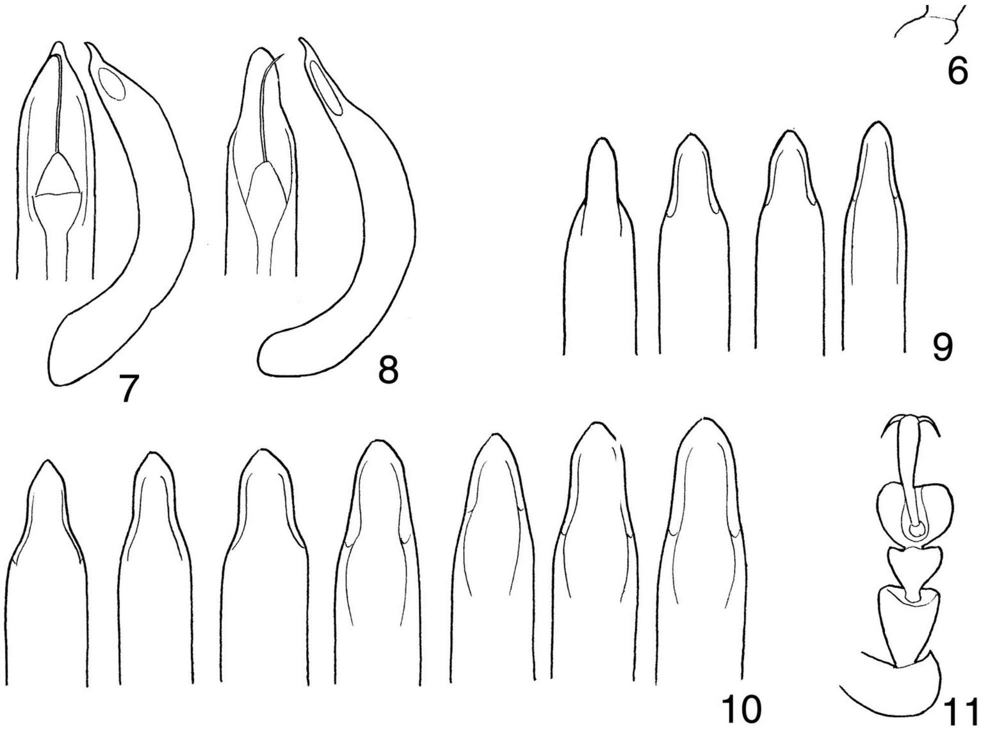
Differential diagnosis

The both members of this subgenus are well characterized by the combination of the following characters: 1) hind wings narrow, long, reaching base of pygidium, 2) elytron with 9 entire puncture rows, 3) pronotal lateral impression distinct along entire length, furrow-shaped basally, 4) last maxillary palpomere narrow and short, as broad as long or almost so, 5) last abdominal sternite convex in both sexes, 6) tarsomeres 1–3 narrow in both sexes, in male slightly broader than in female, 7) dorsum entirely dark metallic, 8) aedeagus without lobes (alae) in apical opening, with 2 small longitudinal impressions near apex ventrally. They externally look like some members of the subgenus *Chalcoidea*, namely *Ch. pusa, Ch. lopatini, Ch. brunnicornis*, *Ch. sajanica* and differ from them in elytral punctures more regular, hind wings more developed (long, but narrow), and aedeagus structure (with 2 small longitudinal impressions near apex ventrally). The members of the subgenus *Hypochalcoidea* differ from *Ch.* (*Chalcoidea*) *discriminata* in narrow tibiae, not broadened apically on external side.

Key to species. There are two species very close externally to each other. They can be identified by the aedeagus structure.

1(2) Aedeagus with narrow and short apical projection, with broad longitudinal impressions near apex, well visible in ventral and in lateral view. Length 4.6–6.7 mm. Figs. 1, 7, 11. south of E Siberia, C, E Mongolia, N-E China.
Ch. discriminata (Jacobson, 1901b)

2(1) Aedeagus with broad and long apical projection, with narrow longitudinal impressions near apex, well visible in lateral view only. Length 4.7–7.2 mm. Figs. 2–6, 8–10. C Mongolia.
Ch. mongolensis (Lopatin, 1966)



***Hypochalcoidea* figures 1–11:** 1 – *Chrysolina discriminata*, pronotum; 2–3 – *Ch. mongolensis* (Mongolia: Central Aimak), fore-tarsus, dorsal view: 2 – male, 3 – female; 4 – *Ch. mongolensis* (Mongolia: Central Aimak), female, hind-tarsus, ventral view; 5–6 – *Ch. mongolensis* (Mongolia: Central Aimak), maxillary palpus: 5 – male, 6 – female; 7–8 – aedeagus, dorsal and lateral view: 7 – *Ch. discriminata* (Mongolia), 8 – *Ch. mongolensis* (N-W Mongolia); 9–10 – *Ch. mongolensis*, intrapopulational variability of the aedeagus apex: 9 – males from Mongolia: Uver-Khangai Aimak, Khangai Mts., 10 – males from Mongolia: Central Aimak, Undzhul; 11 – *Ch. discriminata*, male (Mongolia). (Figs by an unknown author: 1; others – the author's figs.)

Subgenus *Jeanclaudia* Mikhailov, 2009

Diagnosis

In the most species dorsum dark metallic: bronze, green, violet, or black with (or without) bronze tint; in *Ch. tuvensis* head and pronotum black, scutellum brown, elytra rufous with black suture.

Last maxillary palpomere cylindrical or oval and truncate apically, as long as 1.2–1.3 X 3rd palpomere, as wide as latter or less than 1.3 X wider than latter; almost similar in both sexes.

Antenna inserted 1.6–2 X closer to clypeus than to eye; narrow.

Pronotum broadest basally, or before base, or near mid-length, with swollen lateral calli along entire length, with lateral impression different: 1) narrow furrow with sharp outer border along entire length, 2) furrow filled with coalescent punctures in basal ¼–½ and shallow impression anteriorly. Anterior side of pronotum marginated and densely ciliate. Anterior setiferous pore present.

Prothoracic hypomeron longitudinally weakly or rather convex, laterally covered by transverse or irregular wrinkles, without impression and outer border. Basal fold distinct, or weak, or absent. Intercoxal prosternal process weakly convex, or flat, or longitudinally impressed.

Metasternum entirely marginated anteriorly.

Elytron without humeral callus; with abbreviated scutellar row and 9 entire rows, which are regular, or rows 4–7 irregular; rows more or less paired. Punctures in rows moderately large, dense, numerous; rows sometimes hardly visible among dense punctures covering intervals. Intervals between elytral puncture rows flat or slightly convex.

Elytral epipleura inclined outside, visible along entire length in lateral view, ciliate near apex.

Hind wings vestigial.

Tarsomeres 1–3: in female: with narrow glabrous stripe on tarsomere 1 or entirely pubescent beneath; in male: wholly pubescent beneath. Male tarsomeres 1–3 moderately or strongly broadened, female tarsomeres 1–3 narrow. Claw tarsomere without denticles beneath.

Pygidium with distinct longitudinal sulcus along almost entire length except near apex.

Last abdominal sternite convex in both sexes, more convex in female than in male, with narrow longitudinal furrow except near apex in male. Apical margin slightly W-shaped in male, rounded in female.

Aedeagus flattened in cross-section, strongly or moderately curved dorso-ventrally. Apex triangular, rounded or truncate. Flagellum is found in all species examined by me except *Ch. tatianae* in which I had not a possibility to study the internal structure of the aedeagus. Flagellum simple, thin, as long as ⅔ aedeagus length, slightly exposed or not exposed in the most species, distinctly exposed in *Ch. tuvensis*.

Differential diagnosis

Subgenus *Jeanclaudia* is morphologically very close to the species group *Ch.* (*sahlbergiana*) of the subgenus *Pezocrosita*. The latter group includes three species, namely, *Ch. sahlbergiana, Ch. medvedevi*, and *Ch. hyperboreica*. *Jeanclaudia* differs from them in the aedeagus structure: apex triangular, rounded or truncate, but not drawn out, and flagellum mostly short, slightly exposed or not exposed at all, and in the presence of distinct longitudinal sulcus in apical ½ of pygidium. Besides that, *Jeanclaudia* differs from *Ch. sahlbergiana* and *Ch. medvedevi* in dorsum entirely metallic or black. *Jeanclaudia* externally looks like *Pleurosticha* and *Arctolina* and differs from them in the absence of lobes ("alae") at apical opening of aedeagus. *Ch.* (*Jeanclaudia*) *tuvensis* is morphologically very similar to the members of *Taeniosticha* and differs in male characters: fore- and mid-tarsomeres 1–3 broader, last maxillary palpomere distinctly broader than 3rd one, last abdominal sternite impressed in apical ½.

Key to species

1(12) Dorsum entirely dark metallic.

2(5) Pronotum bears lateral furrows with sharp outer border along entire length. Intercoxal prosternal process weakly convex or flat. Elytral puncture rows strongly paired. In female, tarsomere 1 of all tarsi with narrow, distinct glabrous stripe not reaching the apex beneath. Male tarsomeres 1–3 moderately dilated.

3(4) Pronotal lateral calli narrower and less convex; lateral furrows arc-shaped. Elytral puncture rows regular, or rows 4–7 irregular and hardly visible among dense, irregular punctures in intervals. Aedeagus gradually narrowing towards the triangular apex. Dorsum unicolorous, dark bronze or bicolor: head and pronotum dark green, elytra dark bronze. Length 6.4–8.8 mm. Figs. 1, 8, 10. European Russia (Ulyanovsk reg.), N, C, E Kazakhstan, S Siberia.

Ch. ordinata (Gebler, 1823)

4(3) Pronotal lateral calli broader and more convex, swollen (almost like calli in *Ch. convexicollis*); lateral furrows slightly undulate, S-shaped. Elytral puncture rows regular, but hardly visible among dense, irregular punctures in intervals. Aedeagus almost parallel-sided up to apical opening, truncate at apex. Dorsum bicolor: head and pronotum dark green with golden reflection or dark bronze, elytra dark violet; rarely pronotum bronze, elytra green with bronze reflection. Length: 8.4–9.9 mm (males), 9.0–11.7 mm (females). Figs. 2, 5, 7, 9. E Kazakhstan.

Ch. tatianae Mikhailov, 2010

5(2) Pronotum bears lateral furrows in basal ¼–½ only, and with shallow lateral impressions anteriorly. Intercoxal prosternal process longitudinally impressed. In female, tarsomere 1 of all tarsi with very narrow glabrous stripe in basal ½ or entirely pubescent beneath.

6(7) Tibiae strongly angularly dilated at outer apical corner. Male tarsomeres 1–3 moderately dilated. Dorsum dark metallic: bronze, greenish bronze, or blue, or black with bronze tint. Aedeagus rounded apically. Elytral rows strongly paired. Length 6.8–8.9 mm. Figs. 3, 4, 13. S Siberia.

Ch. tibialis (Jacobson, 1895)

7(6) Tibiae slightly dilated at outer apical corner. Dorsum dark metallic: bronze, greenish bronze, or blue, or black with bronze tint.

8(9) Elytral puncture rows strongly paired, hardly visible among dense, large confuse puncturation in intervals. Dorsum sericeous, violet with purple tint. Aedeagus rounded apically. Male tarsomeres 1–3 strongly dilated. Length 8.3– 8.7 mm. Figs. 12, 15–17. This species does not occur at Baikal lake! It inhabits Yakutia.

Ch. baicalica (Mohr, 1966a)

9(8) Elytral puncture rows placed at almost equal distances from each other or paired, distinct among fine puncturation in intervals. Dorsum sericeous, violet with purple tint.

10(11) Punctures in elytral rows larger than those at pronotal disc. Male tarsomeres 1 and 3 strongly dilated. Aedeagus slightly narrowing laterally towards apex, broadly rounded apically. Dorsum bronze or green, moderately shining. Length 6.6–8.4 mm. Figs. 6, 14. S Siberia.

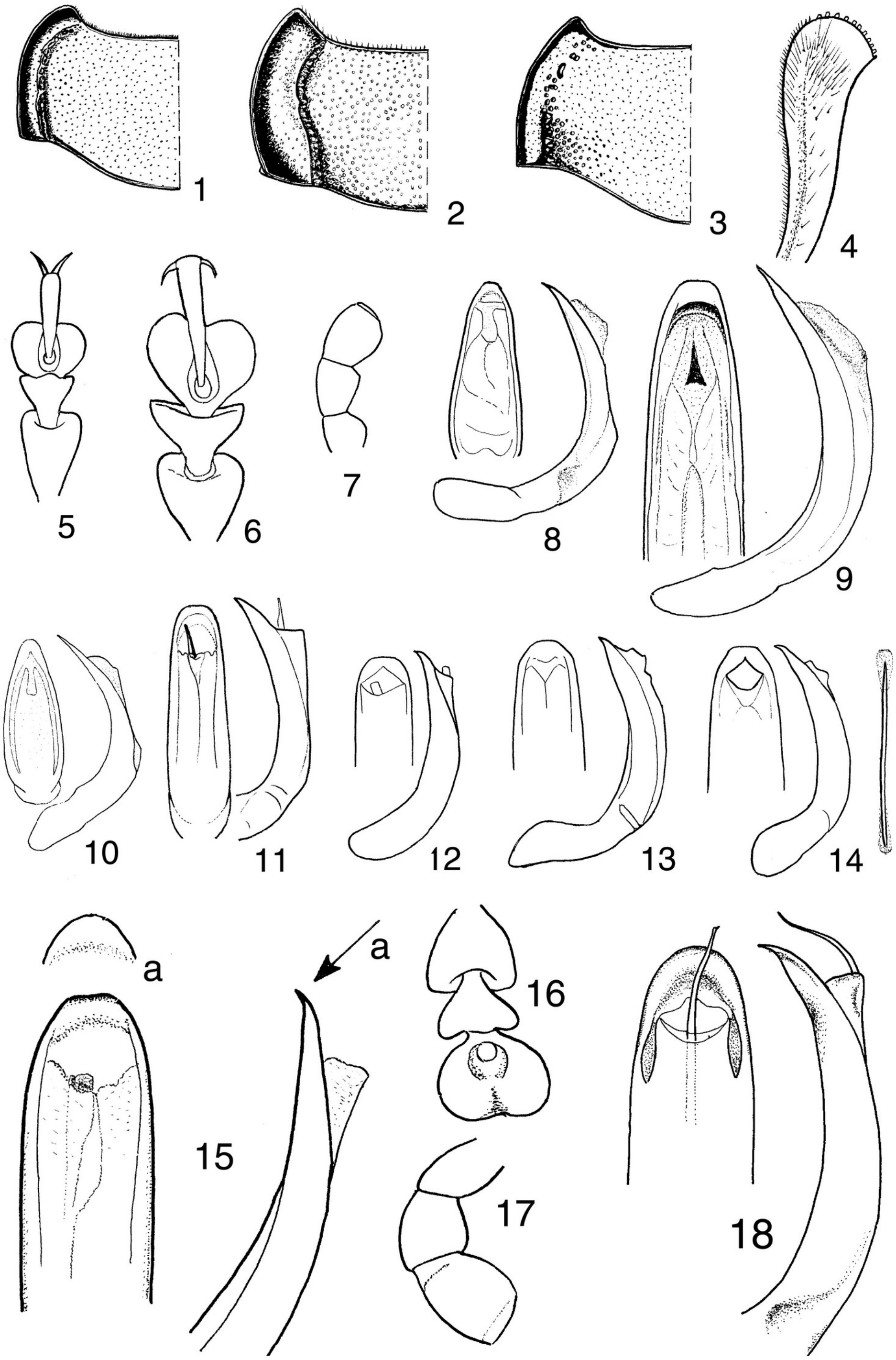
Ch. undulata (Gebler, 1833)

11(10) Punctures in elytral rows (except near base) almost as large as those at pronotal disc. Male tarsomeres 1–3 moderately dilated. Aedeagus rectilinearly and stronger narrowing laterally towards apex, narrowly rounded or truncate apically. Dorsum dull or moderately shining, black or bronze. Length 7.0–7.6 mm. Fig. 11. E Kazakhstan, Russia (Altai Republic).

Ch. asperata Lopatin, 1990b

12(1) Head and pronotum black, moderately shining, elytra rufous with black suture, dull. Pronotum bears lateral furrows in basal ¼, and with shallow lateral impressions anteriorly. In female, tarsomere 1 of all tarsi with very narrow glabrous stripe in basal ½ beneath. Length 5.9–7.1 mm. Fig. 18. Tuva.

Ch. tuvensis L.Medvedev, 1976



***Jeanclaudia* figures 1–18:** 1–3 – *Chrysolina*, pronotum: 1 – *Ch. ordinata* (lectotype, male, Siberia: Barnaul), 2 – *Ch. tatianae* (paratype, male, E Kazakhstan), 3 – *Ch. tibialis* (male, Siberia: Krasnojarsk); 4 – *Ch. tibialis* (male, Siberia: Krasnojarsk), fore-tibia; 5–6 – male, fore-tarsus: 5 – *Ch. tatianae* (paratype), 6 – *Ch. undulata* (Krasnojarsk Krai); 7 – *Ch. tatianae* (paratype, male), maxillary palpus; 8–14 – aedeagus, dorsal and lateral view: 8 – *Ch. ordinata* (lectotype), 9 – *Ch. tatianae* (paratype), 10 – *Ch. ordinata* (European Russia: Ulyanovsk reg.), 11 – *Ch. asperata* (Siberia), 12 – *Ch. baicalica* (Yakutia), 13 – *Ch. tibialis* (Khakassia), 14 – *Ch. undulata* (Siberia) (+ flagellum), 15–17 – *Ch. baicalica*, male (holotype): 15 – aedeagus, 16 –

fore-tarsus, 17 – maxillary palpus, 18 – *Ch. tuvensis*, male (W Sayans), aedeagus. (Orig.)

Subgenus *Liomela* Weise, 1912

Diagnosis

Body broadly obovate, very convex, dark metallic, very shining, with head and pronotum slightly sericeous.

Orbital lines not reaching antennal insertions. Last maxillary palpomere slightly securiform, longer and broader than penultimate, similar in both sexes. Antennal insertion 3 X closer to clypeus than to eye. Antenna long, thin, slightly projecting behind humerus.

Pronotum transverse, more than twice broader than long, with rounded lateral sides; very convex in front view. Pronotal disc convex, almost smooth, very minutely punctulate, pronotal lateral impression broad, shallow, extending to lateral callus, covered by numerous large punctures. Anterior setiferous pore present. Anterior margin marginated, ciliate.

Prothoracic hypomeron with lateral impression smooth, deep in anterior ½, obsolete in posterior ½. Basal fold absent. Intercoxal prosternal process slightly convex, slightly triangularly broadened apically.

Metasternum narrowly marginated and raised anteriorly between mid-coxae.

Elytra without humeral calli. Elytra very convex, with punctures fine, dense, confuse, sometimes punctures arranged in abbreviated rows, visible mostly near suture in apical ½. Sutural stria absent on apical slope.

Elytral epipleura inclined outside, visible along entire length in lateral view, with few very short setae posteriorly.

Hind wings absent.

Pygidium with sharp furrow along entire length.

Last abdominal sternite convex, with apical margin broadly truncate in male, rounded in female.

Tarsomeres 1–3 with entire sole, narrow, similar in both sexes. Claw tarsomere with 2 sharp denticles on underside.

Aedeagus tube-shaped, strongly curved dorso-ventrally, apically rounded, with blunt apical denticles on ventral side. Flagellum large, exposed and folded in half, and its apex is wrapped back into the apical orifice of aedeagus.

Differential diagnosis

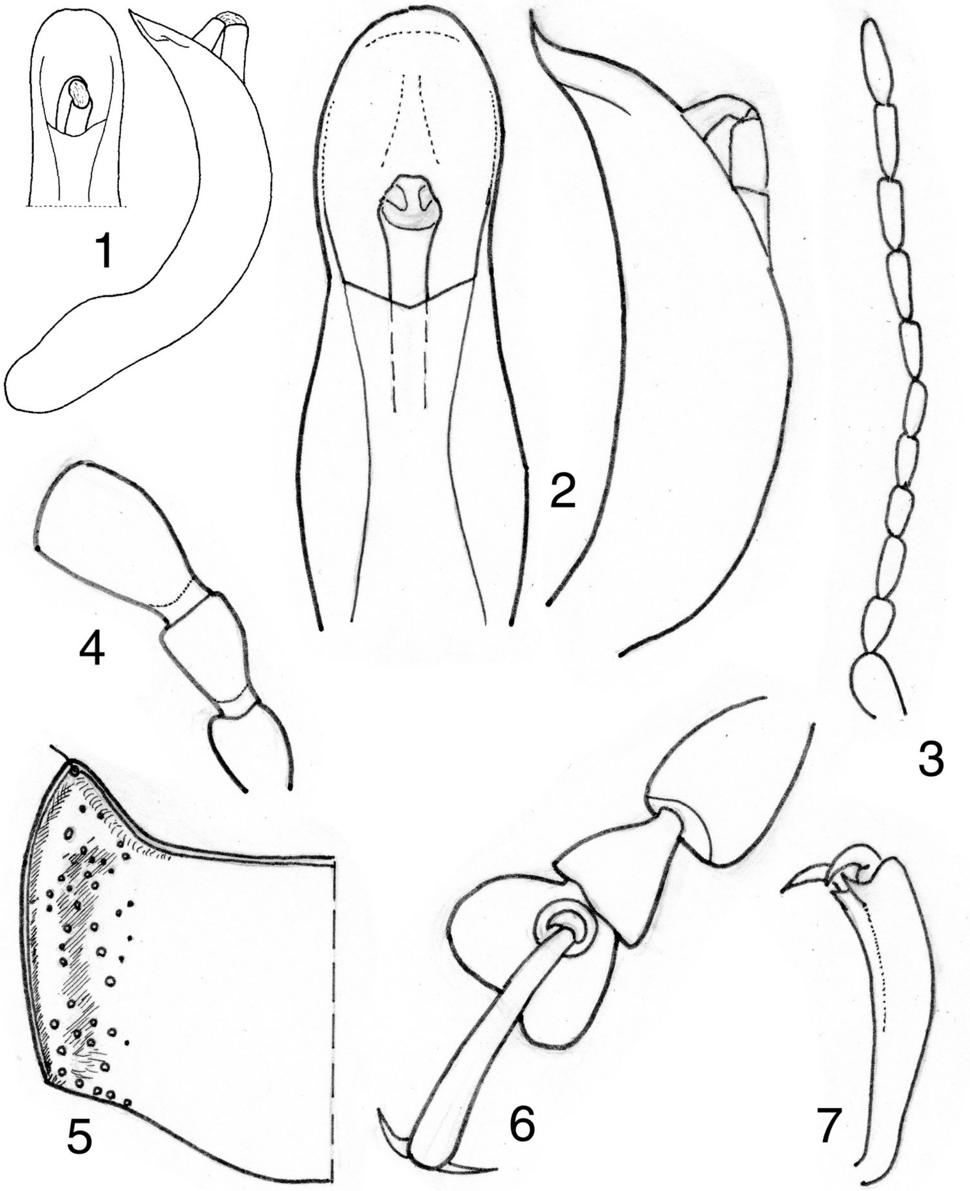
Liomela

The members of the subgenus *Liomela* is morphologically similar with the species of the subgenus *Ghesquiereita* and differ from them in elytral epipleura almost without setae posteriorly and in flagellum of aedeagus folded in half at apical orifice of aedeagus, and its apex is wrapped back into the apical orifice of aedeagus.

Key to species

1(2) Pronotal anterior angles more prominent. Aedeagus less constricted laterally before apical orifice, with apical margin hardly emarginated. Head, pronotum laterally, and scutellum brightly bluish green, pronotal disc dark blue or green with coppery tint, elytra dark coppery, tarsi, labrum, palpi, and antennae piceous black, antennomeres 1 and 2 apically yellowish, lower side of body dark coppery. Length: 6.5 mm. Fig. 1. Tanzania.
Ch. splendida (Weise, 1912)

2(1) Pronotal anterior angles less prominent and more rounded. Aedeagus more constricted laterally before apical orifice, with apical margin well rounded. Body bronze-coppery, with greenish tint on head, elytral lateral sides, abdominal sternites, and legs; coxae, trochanters, apical margin of abdominal sternites pale reddish; or dorsum and elytral epipleura entirely coppery, legs and underside dark brown with metallic tint, antennae piceous with antennomeres 1–2 reddish on underside. Length: 6.4 mm (male), 7.8 mm (female). Figs. 2–7. Tanzania.
Ch. relucens (Daccordi, 1976a), nec Rosenhauer



***Liomela* figures 1–7:** 1 – *Chrysolina splendida,* aedeagus, dorsal and lateral view; 2–7 – *Ch. relucens,* male (paratype, Tanzania): 2 – aedeagus, dorsal and lateral view, 3 – antenna, 4 – maxillary palpus, 5 – pronotum, 6 – fore-tarsus, 7 – last tarsomere. (After: Daccordi, 1976: 1; others – orig.)

Subgenus *Lithopteroides* Strand, 1935

Diagnosis

Color: dorsum entirely metallic, unicolorous: violet or bronze black, or bicolorous: brightly green (or bluish green, or golden green) with black elytral plates; or dorsum red (rufous) in part: dark elytra margined with rufous basally and laterally or rufous elytra with only sutural stripe and smooth spots dark. Antennae and palpi violet, antennomeres 1 and 2 rufous apically, underside, femora, and tibiae dark bronze or violet, tarsi violet.

Last maxillary palpomere oval, beveled or slightly trapeziform with rounded sides, in male 1.1–1.2 X longer than broad, as long as penultimate palpomere, 1.0–1.1 X broader than latter, in female 1.1–1.4 X longer than broad, as long as penultimate palpomere or 1.1 X longer, 1.2 X broader than latter; in male slightly broader than in female.

Antenna inserted 1.6–2.1 X closer to clypeus than to eye, with antennomeres 10–11 project beyond pronotal base. Antenna narrow, with antennomeres 7–11 weakly broadened.

Orbital lines distinct and almost reaching antennal insertion.

Pronotum 1.8–2.0 X broader than long, convex, broadest basally, with lateral sides almost straight, parallel in basal ⅔, and arc-shaped in anterior ⅓; or broadest before base, with lateral sides evenly arc-shaped; or broadest before mid-length, with lateral sides arc-shaped anteriorly and almost straight posteriorly. Anterior side of pronotum marginated, ciliate. Anterior setiferous pore absent. Pronotum laterally swollen along entire length, more swollen anteriorly. Pronotal lateral impression deep and broad along entire length, slightly deeper basally, covered by numerous, dense, mostly coalescent punctures which slightly larger than those at pronotal disc. Punctures at pronotal disc very dense, moderately large.

Prothoracic hypomeron slightly convex, impressed and slightly transversely wrinkled along outside. Basal fold distinct. Intercoxal prosternal process impressed and covered by wrinkled punctures along entire length, with elevated lateral borders, broadened posteriorly. Anterolateral portions of prosternum flat, with wide impression along posterior margin.

Metasternum entirely marginated anteriorly.

Elytron with weak humeral callus; covered by 4–5 regular rows of rounded smooth plates (about 35–50 as a whole), with background irregularly, very densely punctate.

Elytral epipleura inclined outside, visible along entire length in lateral view, densely ciliate near apex.

Hind wings normally developed.

In male, all tarsomeres 1 pubescent beneath, with narrow, short glabrous stripe basally; all tarsomeres 2–3 with entire sole. In female, all tarsomeres 1 with narrow to broad glabrous stripe along entire length beneath, all tarsomeres 2–3 with entire sole or tarsomeres 2 with narrow glabrous stripe along entire length. Tarsomeres 1–3 slightly dilated in male, narrow in female. Claw tarsomere without denticles beneath.

Pygidium with furrow margined by vertical borders along entire length.

Male last abdominal sternite evenly convex, marginated and bearing weak, broad emargination apically.

Aedeagus tube-shaped, depressed dorso-ventrally, curved in lateral view, broadly truncate apically, with apical denticles on ventral side. Flagellum simple, slightly exposed from apical orifice of aedeagus.

Differential diagnosis

Lithopteroides differs from any other known subgenera of *Chrysolina* by the very characteristic structure of elytron, which bears 3–5 rows of smooth rounded plates on the closely and irregularly punctate background.

The present subgenus includes one species, *Ch. exanthematica* (Wiedemann, 1821).

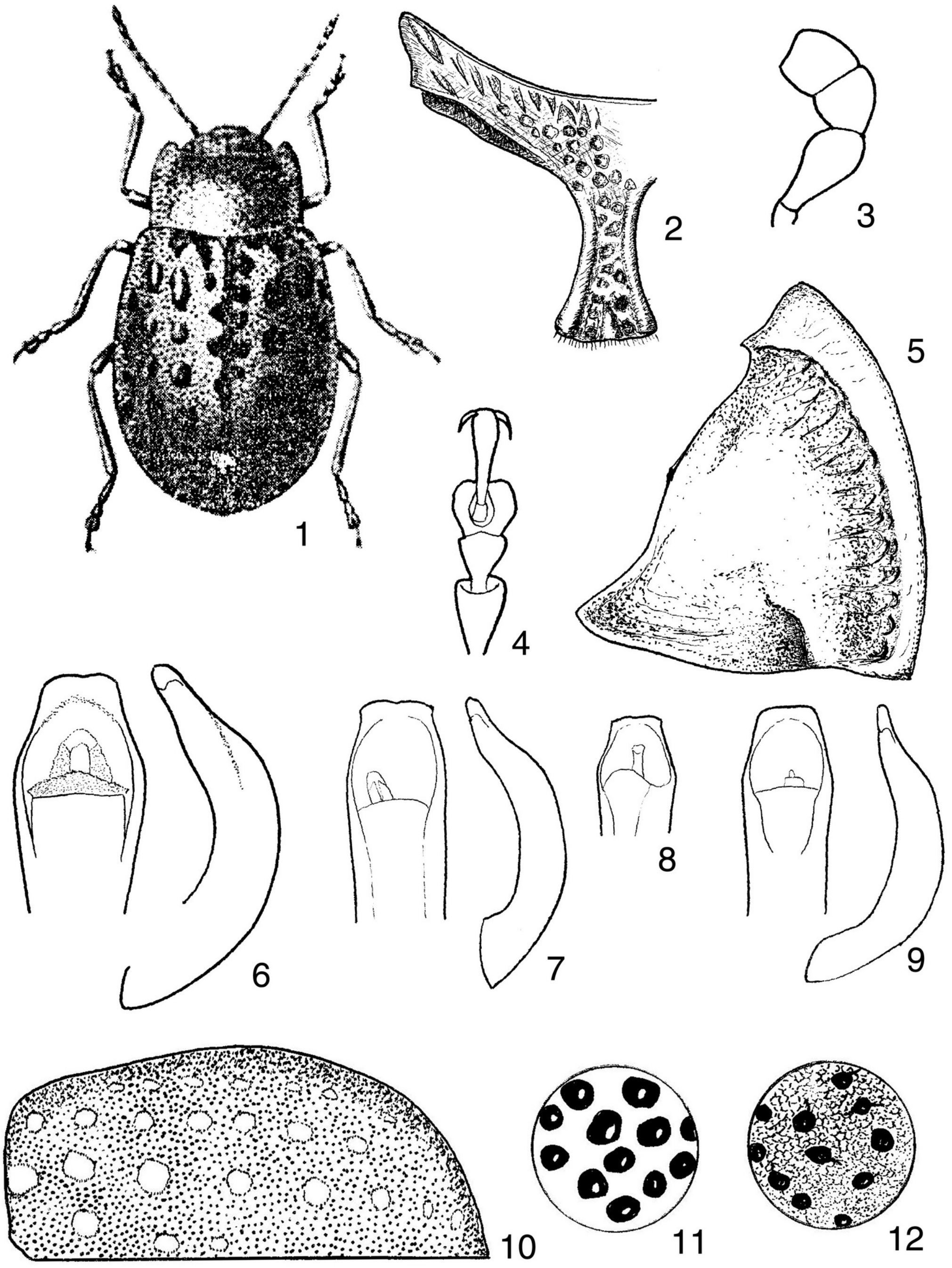
Key to subspecies

1(4) Dorsum entirely metallic or black with metallic tint.

2(3) Elytron with intervals between punctures moderately shining, mostly narrower than diameter of punctures, usually slightly wrinkled, 5th row of elytral smooth plates usually well developed. Dorsum unicolorous: bronze black, violet, or bicolorous: brightly green (or bluish green, or golden green) with black elytral plates (this aberration occurs mostly in India); Length: 5.7–8.8 mm (males), 7.3–11.7 mm (females). Aedeagus length: 2.0–2.6 mm. Figs. 1–7, 10, 11. Afghanistan, E Siberia, Far East, Mongolia, China, India, Japan, Korea, Nepal, Vietnam.
Ch. exanthematica exanthematica (Wiedemann, 1821)

3(2) Elytron with intervals between punctures flat, dull, and mostly not narrower than the respective punctures, 5th row of elytral smooth plates usually weakly developed or absent. Dorsum always unicolorous: bronze black or violet. Length: 8.0–9.1 mm (males), 10.0–10.7 mm (females). Aedeagus length: 2.4–2.7 mm. Fig. 12. N-E Kazakhstan, E Kyrgyzstan, Altai, S Tuva, W Mongolia.
Ch. exanthematica musiva (Gebler, 1830)

4(1) Dorsum red (rufous) in part: 1) typical form: dark elytra margined with rufous basally and laterally, 2) ab. *nigrogemmata*: rufous elytra with only sutural stripe and smooth spots dark, 3) intermediate form: elytra rufous with broad rounded spot at suture covering about ½ of elytral surface. Length: 5.9–7.9 mm (males), 7.7–9.4 mm (females). Aedeagus length: 2.1–2.4 mm. Figs. 8, 9. S Siberia, Yakutia, Polar Urals, Mongolia.
Ch. exanthematica gemmifera (Motschulsky, 1860a)



***Lithopteroides* figures 1-12:** 1–7 – *Chrysolina exanthematica exanthematica*: 1 – total view (*Chrysolina laeviguttata*, type), 2 – prosternum, male (Russian Far East), 3 – maxillary palpus, male (India), 4 – fore-tarsus, male (India), 5 – prothoracic hypomeron, male (Russian Far East), 6–7 – aedeagus, dorsal and lateral view: 6 – male from India, 7 – lectotype *Lithoptera subaenea* ("Amur"); 8–9 – *Ch. exanthematica gemmifera*, aedeagus: 8 – lectotype *Lithoptera guttifera* (Transbaikalia: Nertschinsk), 9 – paralectotype *Lithoptera gemmifera* (Transbaikalia: Nertschinsk); 10 – *Ch. exanthematica exanthematica*, right elytron (Russian Far East); 11–12 – relief of elytron: 11 – *Ch. exanthematica exanthematica* (Russian Far East), 12 – *Ch. exanthematica musiva* (Siberia, Altai). (After: Chûjô, 1958: 1; others – orig.)

Subgenus *Lopatinica* Kippenberg, 2012c

Diagnosis

Dorsum unicolorous, brown with metallic purple or coppery sheen.

Last maxillary palpomere similar in both sexes, or hardly broader in male than in female. Last maxillary palpomere oval, elongate, similar to penultimate one in length and width.

Antenna inserted closer to clypeus than to eye, narrow.

Pronotum broadest basally or before base, swollen laterally along entire length, with lateral impression obsolete to absent in the most species, partly distinct in *Ch. boluensis* only. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore absent.

Prothoracic hypomeron almost flat, laterally without distinct wrinkles and impression. Basal fold weak to absent. Intercoxal prosternal process medially impressed in apical ½.

Metasternum entirely marginated anteriorly.

Elytron without humeral callus. Elytral puncturation double (large and fine punctures), dense, mostly irregular. Large punctures partly forming abbreviated rows.

Elytral epipleura inclined outside, visible along entire length in lateral view, ciliate near apex.

Hind wings absent.

Tarsomeres 1–3 with entire sole, moderately broadened in male, narrow in female. Claw tarsomere without denticles beneath.

Pygidium with weak longitudinal impression in basal ½.

Last abdominal sternite with apical margin rounded, mostly evenly convex in both sexes, with medial longitudinal furrow in male of *Ch. boluensis* only.

Aedeagus curved dorso-ventrally, tube-shaped, without apical denticles, with apex rounded, trapezoidal, with short projection, or three-lobed. Flagellum very narrow, simple, exposed.

Differential diagnosis

Lopatinica is morphologically close to the subgenera *Colaphoptera, Chrysolina* s.str., *Sphaerochrysolina, Cyrtochrysolina*, and *Timarchida*. It differs from *Chrysolina* s.str. in male last maxillary palpomere narrow and in hind wings absent in all species. It differs from *Cyrtochrysolina* in tarsomeres 1–3 narrow in both sexes (in male only slightly broadened), and from *Colaphoptera* in the aedeagus devoid of apical denticles on the ventral side. *Lopatinica* also differs from *Sphaerochrysolina* in body smaller (5.0–8.4 mm as opposed to *Ch.* (*Sphaerochrysolina) umbratilis*, which is 7.5–10.0 mm long) and aedeagus different: much smaller, without very long flagellum. *Lopatinica* also differs from *Timarchida* in elytra, pygidium, and last abdominal sternite not drawn on the apex, and elytral epipleura distinctly ciliate apically.

Key to species (and to subspecies of *Ch. porphyrea*)

1(12) Body elongate-oval. Pronotal lateral impression obsolete or absent. In male last abdominal sternite without medial longitudinal furrow. Species very close externally; examination of male aedeagus is necessary for the precise identification.

2(11) Aedeagus not broadened or only weakly broadened apically.

3(6) Aedeagus apically romboid or trapezoidal.

4(5) Aedeagus apically rhomboid in dorsal view, and slightly S-shaped, thick in lateral view. Body brown, pronotum and elytra with strong purplish violet sheen, legs and antennae brown or antennae and tarsi rufous. Length: 6.0–7.0 mm (male), 7.0–7.7 mm (female). Figs. 18–20. N Turkey.
Ch. kataevi Lopatin, 2000b

5(4) Aedeagus apically trapezoidal, truncate in dorsal view, and almost straight, thin in lateral view. Body dark purple with violet purple metallic sheen dorsally, legs black. Length: 6.1 mm (male), female unknown. Fig. 23. N-E Turkey.
Ch. kabalaki Şen, 2015

6(3) Aedeagus rounded-square or bearing short projection apically.

7(8) Aedeagus rounded-square apically. Pronotal lateral sides straight or rounded, less convergent forward. Body brown, pronotum and elytra usually with strong purplish violet sheen, rarely with coppery sheen, antennae and legs rufous. Length: 5.5–6.9 mm (male), 7.1– 8.4 mm (female). Figs. 9–12. N-W part of Greater Caucasus.
Ch. porphyrea kubanica Bechyné, 1952a

8(7) Aedeagus bearing short projection apically.

9(10) Apex of aedeagus without hook in lateral view. Pronotal lateral sides straight or almost so, more convergent forward. Body brown, pronotum and elytra with strong purplish violet sheen, antennae rufous, legs rufous or brown. Length: 5.3– 6.6 mm (male), 6.8–7.3 mm (female). Figs. 1–8, 24–26. Greater Caucasus, Georgia, Armenia, N-E Turkey.
Ch. porphyrea porphyrea (Faldermann, 1837)

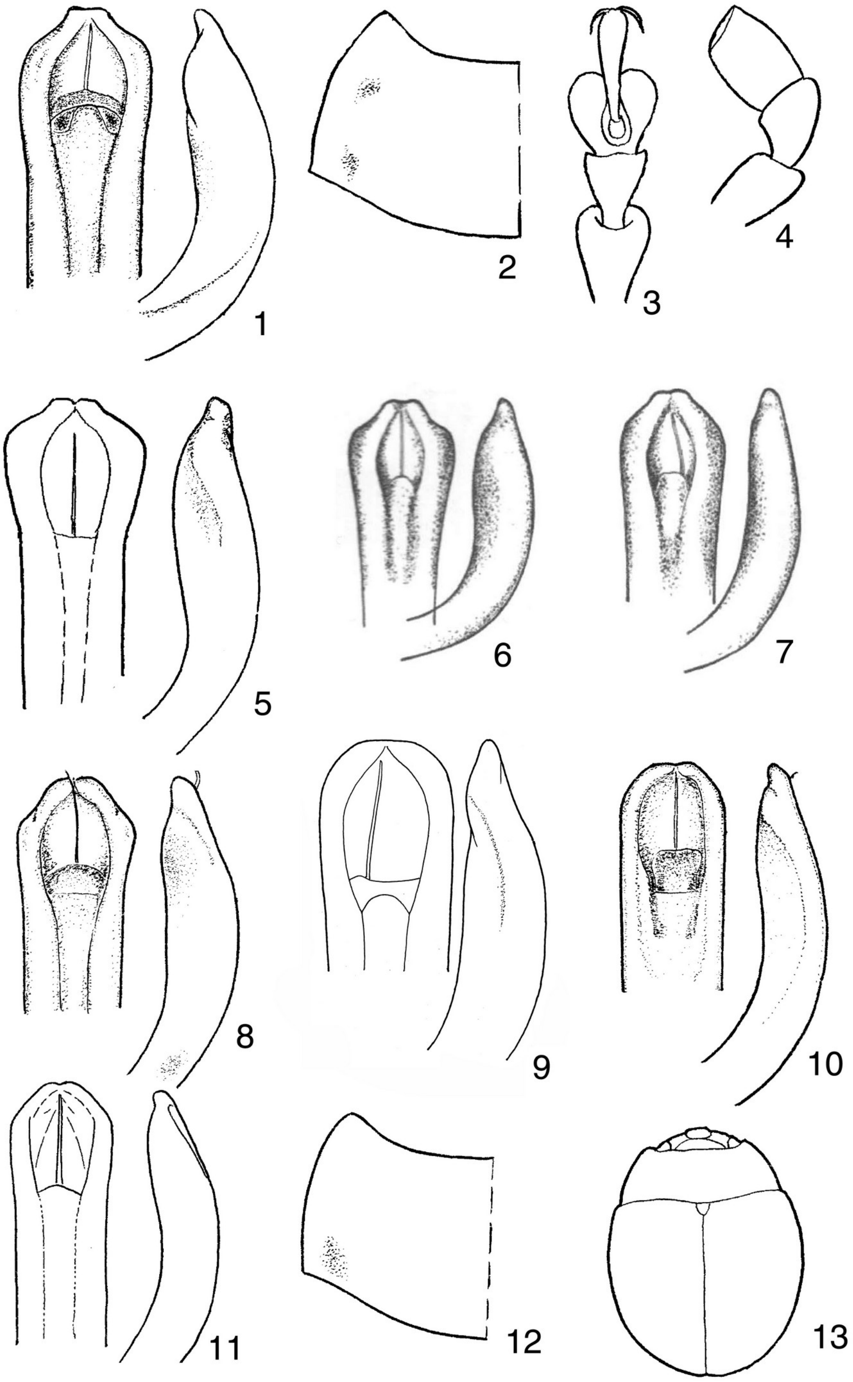
10(9) Apex of aedeagus hook-shaped in lateral view. Pronotal lateral sides weakly rounded, less convergent forward. Body brown, pronotum and elytra with purplish violet sheen, legs and antennae brown. Length: 5.0 mm (male), 7.5 mm (female). Fig. 21. Georgia (Adzharia), E Turkey.

Ch. curvata Kippenberg, 2012c

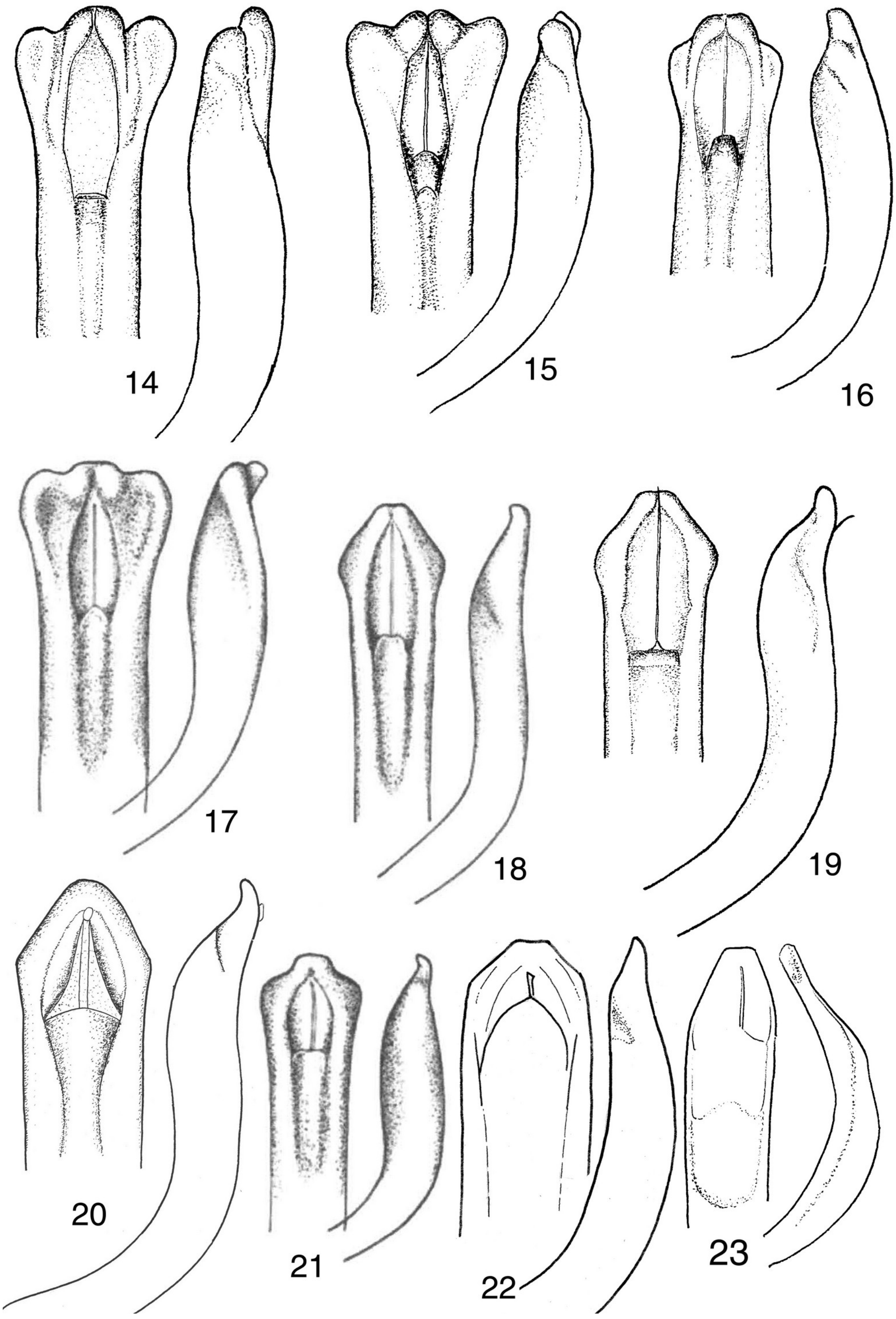
11(2) Aedeagus very broadened, three-lobed apically. Body brown or dark brown, pronotum and elytra with strong purplish violet or coppery sheen, antennae rufous, legs rufous or brown. Length: 5.8–7.0 mm (male), 7.0–8.1 mm (female). There are three subspecies revised by Kippenberg (2012c). Figs. 14–17. Georgia (Adzharia), Turkey.

Ch. adzharica Lopatin, 1988

12(1) Body almost rounded (Fig. 13). In basal ¼, pronotal lateral impression distinct, not very deep, but with vertical border laterally, very shallow in anterior ¾. In male last abdominal sternite with medial longitudinal furrow. Aedeagus hardly broadened and bearing short projection apically. Body blackish dark brown, head, pronotum and elytra purplish violet sheen, labrum, antennae and tarsi pale brown. Length: 6.5 mm (male), 7.5 mm (female). Figs. 13, 22. N-W Turkey.
Ch. boluensis Kippenberg, 2012c

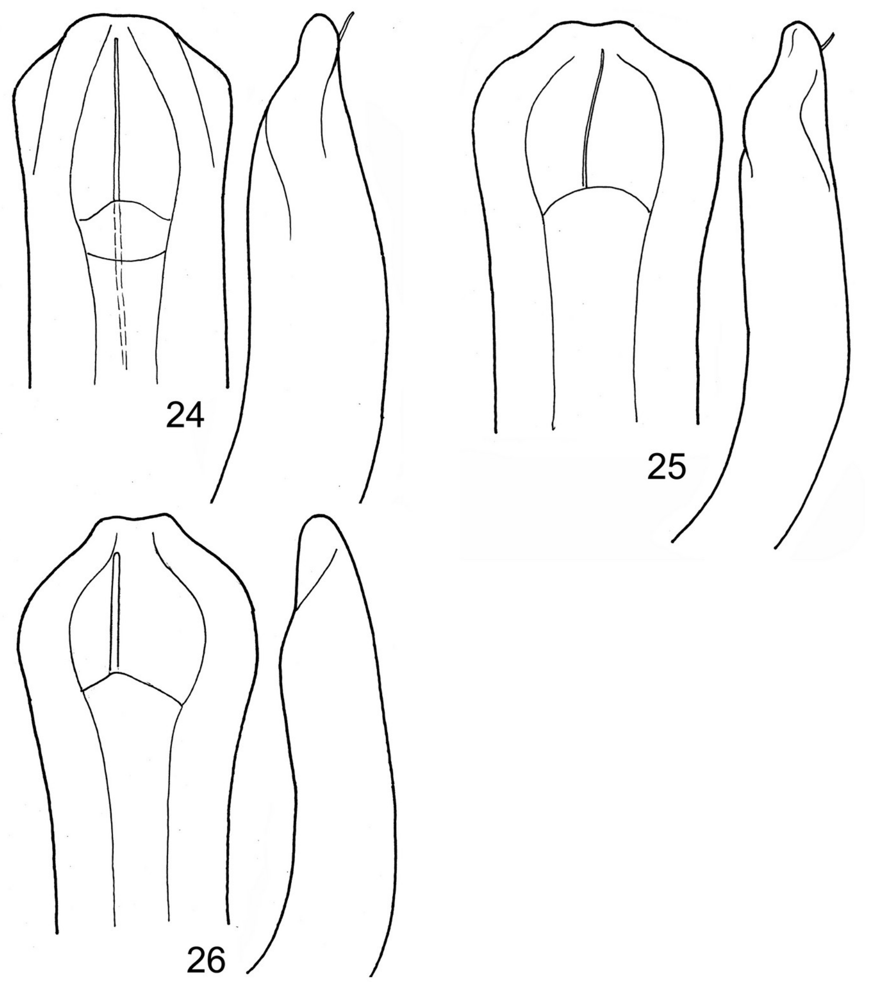


***Lopatinica* figures 1–13:** 1–7 – *Chrysolina porphyrea porphyrea*: 1–4 – lectotype *Chrysomela porphyrea* (Armenia): 1 – aedeagus, dorsal and lateral view, 2 – pronotum, 3 – fore-tarsus, 4 – maxillary palpus, 5–7 – aedeagus, dorsal and lateral view: 5 – male (Georgia: Adzharo-Imeretinsky Ridge), 6 – syntype *Ch. differens* (Georgia: Svanetia), 7 – syntype *Ch. trapezicollis* (Georgia: Somlja); 8 – intermediate form between subspecies *porphyrea* and *kubanica*, aedeagus, dorsal and lateral view (Abkhazia); 9–12 – *Ch. porphyrea kubanica*: 9–11 – aedeagus, dorsal and lateral view: 9 – syntype *Ch. porphyrea kubanica* (W Caucasus), 10 – topotype *Ch. trapezicollis exsul* (W Caucasus: Abago Mt.), 11 – male (W Caucasus: Achishkho Mt.), 12 – pronotum (W Caucasus: Achishkho Mt.); 13 – *Ch. boluensis*, dorsal view, holotype (N-W Turkey). (After: Kippenberg, 2012c: 6; others – orig.)



***Lopatinica* figures 14–23:** Aedeagus, dorsal and lateral view: 14 – *Chrysolina adzharica adzharica* (topotype, Georgia, Adzharia: Batumi Distr.), 15 – *Ch. adzharica heinzi* (topotype, Turkey: Artvin Prov.), 16 – *Ch. adzharica* subsp. unknown (Georgia, Adzharia: Khino Mt.), 17 – *Ch. adzharica excavata* (holotype, Turkey: Artvin Prov.), 18–20 – *Ch. kataevi*: 18 – male (holotype *Ch. daccordiana*, Turkey: Trabzon), 19 – holotype *Ch. kataevi* (N-E Turkey), 20 – male (paratype *Ch. daccordiana*, Turkey: Trabzon Prov.: Sumela), 21 – *Ch. curvata*, holotype

(Georgia, Adzharia); 22 – *Ch. boluensis*, holotype (Turkey: Bolu Prov.); 23 – *Ch. kabalaki* (holotype, Turkey). (After: Kippenberg, 2012c: 17, 18, 21; Şen, 2015: 23; others – orig.)



***Lopatinica* figures 24–26:** Aedeagus, dorsal and lateral view: 24 – *Chrysolina porphyrea porphyrea* (syntype *Ch. porphyrea diga*, Georgia: Abkhazia), 25 – *Chrysolina porphyrea porphyrea* (syntype *Ch. porphyrea erivanicola*, Armenia), 26 – *Chrysolina porphyrea porphyrea* (syntype *Ch. trapezicollis kutaisa*, Georgia). (Orig.)

Subgenus *Maenadochrysa* Bechyné, 1950a

Diagnosis

Dorsum unicolorous, dark metallic (bronze, violet, blue, green, olivaceous) or black. Lower body side and legs shining, metallic violet or blue, entirely or with femora non-metallic red (except the apex).

Last maxillary palpomere slightly longer than wide, obliquely truncate apically, as wide as penultimate one, similar in both sexes.

Antenna inserted closer to clypeus than to eye, with antennomeres 7–10 broadened, as long as broad or broader than long.

Pronotum broadest basally, with lateral sides slightly convex or almost straight, converging forward, swollen laterally along entire length, with shallow and narrow lateral furrow in basal ¼-⅓, and shallow, obsolete broad impression filled with large punctures, or without any impression in anterior ⅔–¾. Pronotal disc finely to largely punctate. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore absent.

Prothoracic hypomeron convex, laterally with shallow impression filled by more or less distinct transverse wrinkles; without outer border. Basal fold strong in the most species, obsolete in *Ch. pseudoaenea* only. Intercoxal prosternal process with longitudinal medial furrow along entire length.

Metasternum entirely marginated anteriorly.

Elytron with weak to obsolete humeral callus or without it. Elytral puncturation mostly or entirely irregular, consists of three types of punctures: primary punctures forming longitudinal rows which are abbreviated and hardly traced among more or less dense secondary punctures in intervals; tertiary punctures, the finest ones more or less dense.

Elytral epipleura inclined outside, visible along entire length in lateral view, ciliate near apex.

Hind wings normally developed or slightly reduced, reaching abdominal apex.

Tarsomeres 1–3: in male: moderately broadened and bearing entire sole; in female: narrow, in the most species with tarsomeres 2–3 bearing entire sole, tarsomere 1 bearing glabrous stripe beneath, this glabrous stripe not reaching apex in fore- and mid-tarsi, and projecting along entire length in hind-tarsi; in *Ch. pseudoaenea* all tarsomeres 1–3 with entire sole, with only tarsomere 1 sparsely pubescent medially. Claw tarsomere without denticles beneath.

Pygidium with distinct longitudinal furrow along entire length.

Last abdominal sternite evenly weakly convex, with apical margin broadly truncate in male, rounded in female, with deep furrow along apical margin.

Aedeagus narrow, depressed dorso-ventrally, moderately evenly curved, with apex simple: rounded, roundly triangular or roundly obtuse, without apical denticles, with flagellum narrow, simple, slightly exposed.

Differential diagnosis

Species of the subgenus *Maenadochrysa* externally look like the members of the subgenus *Threnosoma* and differ from them in body usually smaller, in prothoracic hypomeron more convex, aedeagus less curved dorso-ventrally and devoid of apical denticles, and in female tarsomere 1 with glabrous stripe beneath (in all taxa except *Ch.* (*M.*) *pseudoaenea* and *Ch.* (*M.*) *affinis vicinitatis*).

Ch. (*Maenadochrysa*) *femoralis* and *Ch.* (*M.*) *aveyronensis* resemble *Ch.* (*Chalcoidea*) *carnifex* (subspecies without elytral lateral stripe) and differ in male aedeagus without narrow apical projection, and female tarsomere 1 with glabrous stripe beneath.

Some members of the subgenus *Maenadochrysa*, especially *Ch*. (*M.*) *femoralis rufofemorata* and *Ch*. (*M.*) *affinis vicinitatis* externally close to *Ch*. (*Allochrysolina*) *fuliginosa*, especially, subspecies *Ch*. (*A.*) *fuliginosa coriacea*, *Ch*. (*A.*) *confossa*, *Ch*. (*A.*) *opacicollis* and differ from them in the lateral sides of pronotum slightly convex, the absence of vertical outer border at prothoracic hypomeron, obsolete to absent humeral calli, and in female tarsomere 1 with glabrous stripe beneath (in all taxa except *Ch*. (*M.*) *pseudoaenea* and *Ch*. (*M.*) *affinis vicinitatis*).

Species of the subgenus *Maenadochrysa* also look like some members of the subgenus *Ovosoma* (especially, *Ch.* (*O.*) *vernalis cantabrica*) and differ from them, besides quite different aedeagus structure, in the last abdominal sternite without impression in apical part, in female tarsomere 1 with glabrous stripe beneath (in all taxa except *Ch.* (*M.*) *pseudoaenea* and *Ch.* (*M.*) *affinis vicinitatis*), and red color of the femora typical of many *Maenadochrysa* members.

Key to species

Remark: three types of elytral punctures are treated below: 1) primary punctures – those forming longitudinal rows (mostly paired), usually largest punctures, 2) secondary punctures – those filling the intervals between rows of primary punctures, they are almost as large as primary punctures or smaller, 3) tertiary punctures – the finest punctures, placed between primary and secondary ones.

1(2) Elytral puncturation moderately large and very dense, with intervals uneven, wrinkled. Primary punctures not numerous, forming abbreviated rows, which hardly visible among secondary punctures, primary punctures larger than pronotal punctures. Secondary punctures very dense, as dense as pronotal punctures and as large as those. Tertiary punctures very sparse or absent. Upper side moderately shining, pure black or black with weak blue sheen, lower side shining, metallic blue or violet. Apical margin of aedeagus roundly triangular, in lateral view apical angle is 30°. Length 6.9–7.3 mm (♂), 8.6–9.3 mm (♀). Fig. 21. S France, S, S-E Spain.

Ch. aveyronensis Bechyné, 1950a

2(1) Elytral puncturation usually sparser. If elytral secondary punctures very dense, then they much larger than pronotal punctures, and tertiary punctures dense, numerous.

3(4) Apical edge of aedeagus obtusely rounded, in lateral view apical angle is 53–60°.

Ch. affinis (Fabricius, 1787)

Subspecies:

(a) subsp. *affinis*. Tunisia. Upper side sericeous, bronze, lower side and legs violet, shining. Elytral primary and secondary punctures rather fine, tertiary punctures dense, intervals flat. Pronotal punctures fine, very dense. Length: 7.9–8.9 mm (♂), 8.7 mm (♀). Figs. 1, 2, 5, 14, 18.

(b) subsp. *hyacinthina* (Suffrian, 1851). S Italy, Sicily. Upper side shining, green with golden sheen, blue, violet, rarely black, lower side and legs including femora blue or violet, or with femora + trochanters red except femora apex. Elytral primary and secondary punctures moderate to large, tertiary punctures dense, intervals flat. Pronotal punctures fine, very dense. Length: 7.4–8.2 mm (♂), 8.3 mm (♀). Figs. 26, 27.

(c) subsp. *mesatlantica* (Kocher, 1958). Morocco. Upper side sericeous, black, lower side, apex of femora, tibiae, and tarsi violet, femora red except their apex. Elytral primary and secondary punctures moderate to large, tertiary punctures dense, intervals flat or weakly convex. Pronotal punctures fine, very dense. Length: 7.4–8.4 mm (♂), 8.5–9.5 mm (♀). Figs. 15, 17.

(d) subsp. *baetica* (Suffrian, 1851). S Spain, Morocco, Algeria. Upper side sericeous or moderately shining, usually bronze, rarely black, lower side, apex of femora, tibiae, and tarsi blue or violet, trochanters and femora (except apex of femora) red. Elytral primary and secondary punctures moderate to large, larger than in subsp. *affinis*, tertiary punctures dense, intervals usually weakly convex. Pronotal punctures fine, very dense. Length: 6.5–8.1 mm (♂), 8.1–9.3 mm (♀). Fig. 3.

(e) subsp. *hecateia* Bechyné, 1950a. C Spain. Upper side moderately shining, bronze or black, lower side, apex of femora, tibiae, and tarsi violet, trochanters and femora (except apex) red. Elytral primary and secondary punctures moderate to large, larger than in subsp. *affinis*, tertiary punctures dense, intervals flat or weakly convex. Pronotal punctures larger than elytral tertiary punctures, larger than in subspecies *affinis* or *baetica*, very dense. Length: 6.4–7.9 mm (♂), 8.0–8.9 mm (♀).

(f) subsp. *nevadensis* Cobos, 1952. S Spain. Upper side sericeous, black, lower side, apex of femora, tibiae, and tarsi violet, femora red except their apex. Elytral primary and secondary punctures rather fine to moderately large, tertiary punctures dense, distinct to obsolete, intervals flat. Pronotal punctures fine, very dense. Length: 6.8 mm (♂). Fig. 19.

(g) subsp. *vicinitatis* Bechyné, 1950a. N Spain. Upper side shining, black, lower side, apex of femora, tibiae, and tarsi violet, femora (except apex) red, or violet and translucent red, or pure violet. Elytral primary and secondary punctures large to very large, tertiary punctures dense, intervals convex, wrinkled. Pronotal punctures slightly larger than elytral tertiary punctures, very dense. Length: 6.2–7.3 mm (♂), 8.8 mm (♀). Figs. 4, 20, 23.

(h) subsp. *tagenii* (Herrich-Schaeffer, 1839). Portugal. Upper side shining, bright bronze, lower side including elytral epipleura, apex of femora, tibiae, and tarsi violet, femora (except apex) red. Elytral primary punctures large, secondary punctures moderate, tertiary punctures dense, intervals slightly wrinkled. Pronotal punctures much larger than elytral tertiary punctures, very dense. Length: 8.5 mm (♀).

Subspecies unknown to me: *Ch. affinis atlantica* (Escalera, 1914), *Ch. affinis lepineyi* (Kocher, 1958) (Fig. 16), *Ch. affinis ilerdensis* Petitpierre, 2019.

4(3)Apical angle of aedeagus in lateral view is 29–49˚.

5(6,7) Species from Europe. Pronotal punctures distinct, dense, not fine or obsolete, larger than elytral tertiary punctures, usually as large as pronotal punctures in *Ch. affinis vicinitatis* or *Ch. affinis hecateia*. Apex of aedeagus roundly triangular, shorter than in the two following species (cf figs. 11, 12, 22 with 13, 24).

Ch. femoralis (Olivier, 1790)

Subspecies:

(a) subsp. *femoralis*. S France. Upper side moderately shining, black with bronze sheen, dark blue, or dark violet, lower side, apex of femora, tibiae, and tarsi violet, femora (except apex) red. Elytral primary and secondary punctures moderately large, tertiary punctures dense, intervals flat. Pronotal punctures larger than elytral tertiary punctures, very dense. Length: 8.1– 8.2 mm (♂), 9.4–10.2 mm (♀). Fig. 12.

(b) subsp. *rufofemorata* (Heyden, 1870). N Spain. It externally looks like sympatric *Ch. affinis vicinitatis*, and differs (besides the aedeagus structure) in elytral punctures some smaller. Upper side shining, black, lower side blue or black with blue sheen, apex of femora, tibiae, and tarsi violet, femora (except apex) red. Elytral primary and secondary punctures large, tertiary punctures dense, intervals convex, wrinkled. Pronotal punctures larger than elytral tertiary punctures, very dense. Length: 6.8–7.0 mm (♂), 8.5 mm (♀). Figs. 6–11.

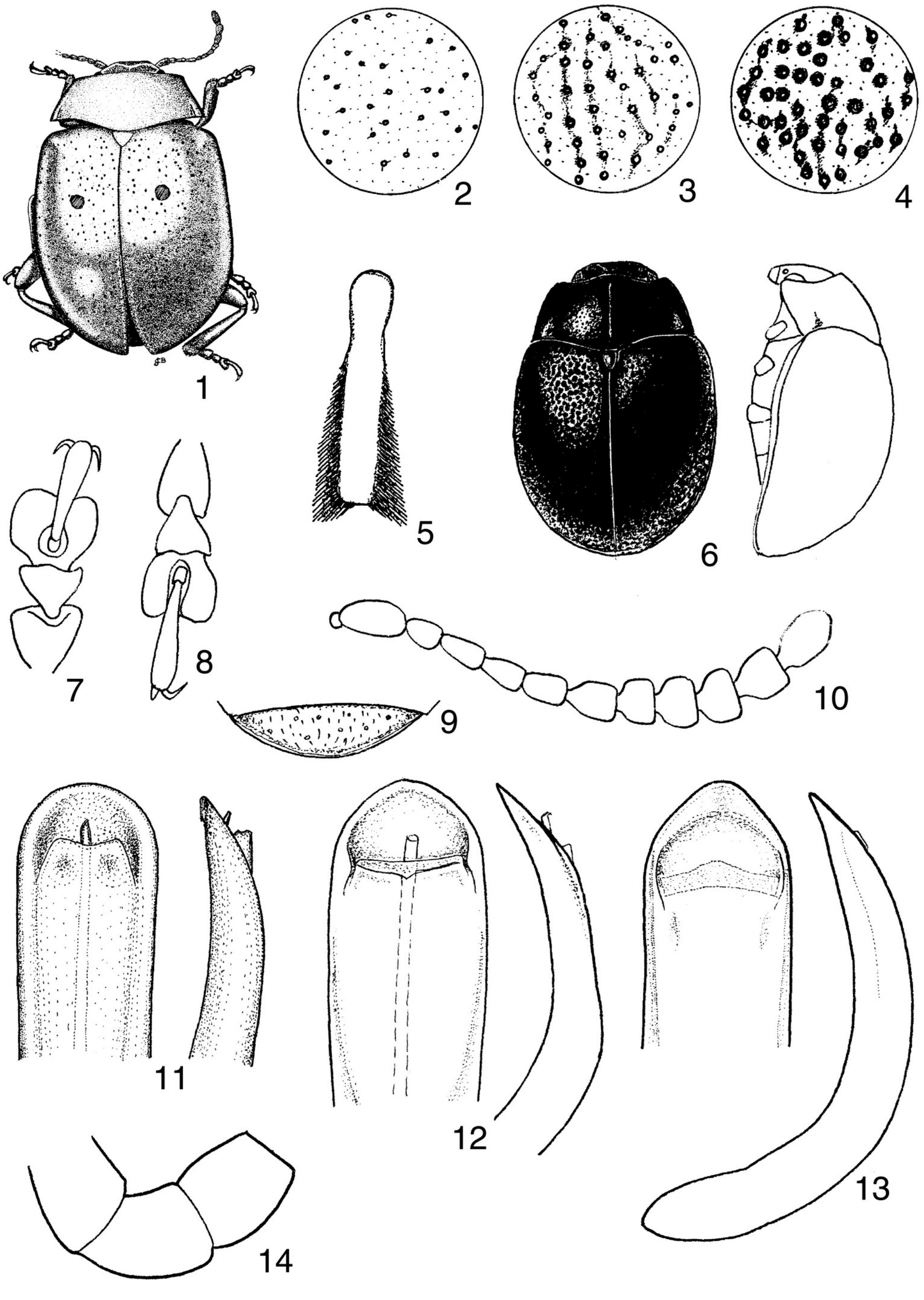
(c) subsp. *varipes* (Suffrian, 1851). S France, Pyrenees-Orientales. It is morphologically close to *Ch. femoralis femoralis*, and differs in apical angle of aedeagus in lateral view some larger, 35–49˚ (cf 24–37˚ in *femoralis femoralis*) and elytral punctures finer. Upper side moderately shining, black with very weak metallic shine, lower side and legs blue. Elytral primary punctures moderately large, secondary punctures some smaller, tertiary punctures dense, intervals flat. Pronotal punctures larger than elytral tertiary punctures, dense. Length 8.7–9.3 mm. Fig. 22.

(d) subsp. *bargusiana* Bechyné, 1950a. Spain (Pyrenees). Upper side moderately shining, black, lower side and legs violet, Elytral primary and secondary punctures moderately large, tertiary punctures dense, intervals flat. Pronotal punctures larger than elytral tertiary punctures, very dense. Length: 6.7 mm (♂), 9.5 mm (♀).

Subspecies unknown to me: *Ch. femoralis balanyensis* Bechyné, 1950a*, Ch. femoralis caliginosa* (Olivier, 1807)*, Ch. femoralis ootypa* Bechyné, 1952a*, Ch. femoralis parumnitens* Bechyné, 1952a*, Ch. femoralis putealis* Bechyné, 1952a*, Ch. femoralis laeta* (Weise, 1884a).

6(5,7) Species from N Morocco. Pronotal punctures dense, but very fine to obsolete, as large as elytral tertiary punctures. Upper side dull, olivaceous bronze, lower side and legs violet, shining. Elytral primary punctures large, secondary punctures moderately large, tertiary punctures usually sparse, intervals convex. Pronotum with posterior angles 90˚, lateral sides rounded, convergent forward. Apex of aedeagus roundly triangular, longer than in the previous species. Length: 7.9–8.5 mm (♂), 9.1–9.8 mm (♀). Fig. 13. N Morocco.
Ch. pseudoaenea (Fairmaire, 1865)

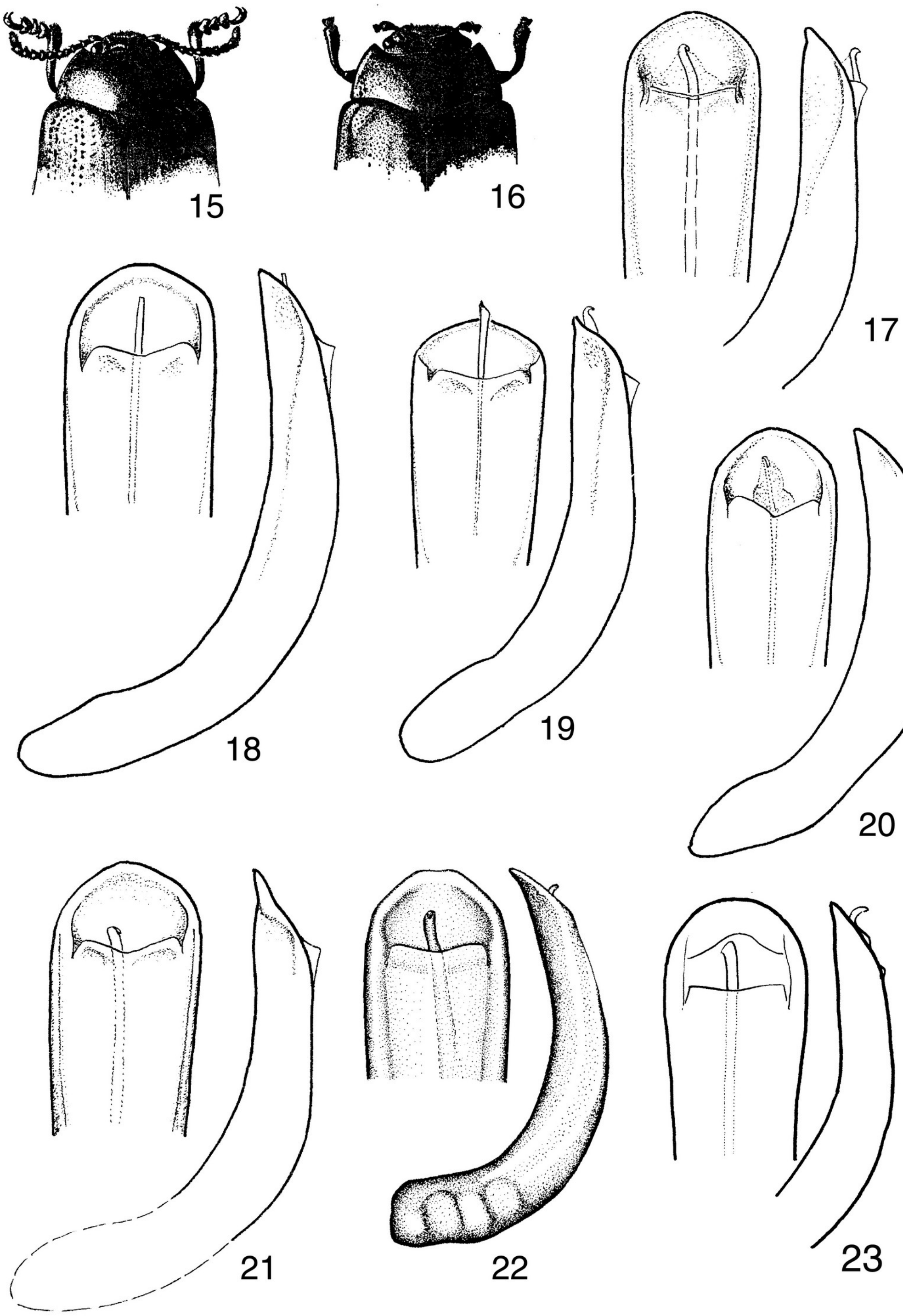
7(5.6) Species from Algeria. Pronotal punctures dense, distinct, not fine or obsolete, as large as elytral tertiary punctures. Upper side weakly shining, black, lower side and legs violet, shining. Elytral primary punctures moderately large, secondary punctures fine, tertiary punctures dense, intervals flat. Apex of aedeagus roundly triangular, longer than in the *Ch. femoralis*. Pronotum with posterior angles slightly less than 90˚, lateral sides rectilinear, strongly convergent forward. Length: 8.0–11.0 mm. Figs. 24–25. Algeria. There are two subspecies.
Ch. crassipes (Lucas, 1849)



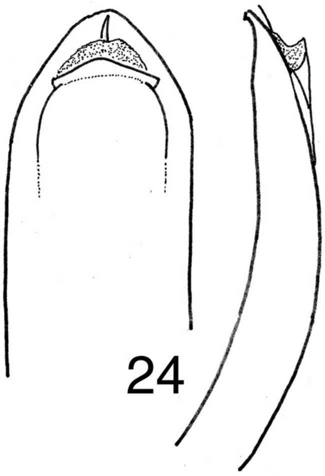
***Maenadochrysa* figures 1–14**: 1 – *Chrysolina affinis affinis* (lectotype, female, "Barbarie"); 2–4 – elytral puncturation, at the same magnification: 2 – *Ch. affinis affinis* (topotype, Tunisia), 3 – *Ch. affinis baetica* (topotype, Spain: Murcia), 4 – *Ch. affinis vicinitatis* (topotype, Spain: Peña Labra); 5 – *Ch. affinis affinis*, female, 1st hind-tarsomere (topotype, Tunisia); 6–11 – *Ch. femoralis rufofemorata* (syntype, male, Spain: Santas Albas): 6 – dorsal and lateral view, 7 – fore-tarsus, 8 – hind-tarsus, 9 – last abdominal sternite, 10 – antenna, 11 – aedeagus, dorsal and lateral view; 12–13 – aedeagus, dorsal and lateral view: 12 – *Ch. femoralis femoralis* (S-E France), 13 – *Ch. pseudoaenea* (topotype, Morocco: Tanger); 14 – *Ch. affinis*

Maenadochrysa

affinis, maxillary palpus (topotype, male, Tunisia (Asturias). (After: Bourdonné, 1984: 1; others – orig.)



***Maenadochrysa* figures 15-23**: 15–16 – total dorsal view: 15 – *Chrysolina affinis mesatlantica* (male, Morocco), 16 – *Ch. affinis lepineyi* (Morocco); 17–23 – aedeagus, dorsal and lateral view: 17 – *Ch. affinis mesatlantica* (topotype, Morocco: M. Atlas), 18 – *Ch. affinis affinis* (topotype, Tunisia), 19 – *Ch. affinis nevadensis* (Spain: Granada), 20 – *Ch. affinis vicinitatis* (topotype, Spain: Peña Labra), 21 – *Ch. aveyronensis* (S France), 22 – *Ch. femoralis* *varipes* (S France), 23 – *Ch. affinis vicinitatis* (syntype, Spain: Asturias) (After: Kocher, 1958: 15, 16; Bourdonné, 1999: 22; others – orig.)



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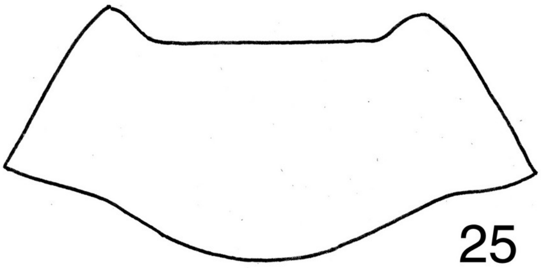

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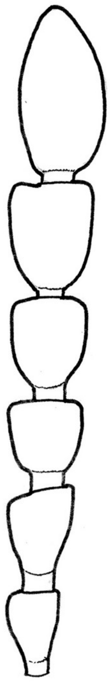

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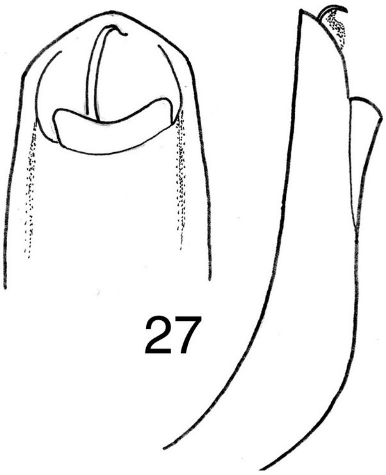

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Maenadochrysa **figures 24–27**: 24–25 **–** *Chrysolina crassipes,* male (Algeria): 24 – aedeagus, dorsal and lateral view, 25 – pronotum; 26–27 – *Ch. affinis hyacinthina,* male (holotype *Ch. affinis bruttiana,* S Italy): 26 – antennomeres 6–11, 27 – aedeagus, dorsal and lateral view. (Orig.)

Subgenus *Medvedevlevna* Özdikmen, 2008

Diagnosis

Dorsum black with weak violet or bronze sheen or bright green.

Last maxillary palpomere as long as broad or slightly broader than long, slightly shorter than penultimate palpomere, similar in both sexes.

Antenna inserted 3 X closer to clypeus than to eye; short, reaching pronotal base, with antennomeres 7–11 broadened.

Pronotum mostly broadest near mid-length, laterally swollen along entire length. Disc covered by dense fine punctures. Lateral impression obsolete to absent, developed only near base and sometimes covered by punctures which more dense, than those at the disc. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore absent.

Prothoracic hypomeron more or less convex, with weak wrinkles laterally, without lateral border. Basal fold weak to obsolete. Intercoxal prosternal process with broad longitudinal medial furrow along entire length.

Metasternum entirely marginated anteriorly.

Humeral calli absent. Elytral punctures dense, moderately large, wholly confused.

Elytral epipleura inclined outside, visible along entire length in lateral view, ciliate near apex.

Hind wings reduced, shorter than metathorax.

Pygidium with weak impression in basal ½ or with distinct furrow along almost entire length.

Last abdominal sternite evenly convex, with apical margin broadly emarginated, nearly straight in male, slightly swollen apically, with apical margin convex in female.

Tarsomeres 1–3 with entire sole in both sexes; in male they broad, especially in fore- and mid-tarsi; in female they narrow. Claw tarsomere without denticles beneath.

Aedeagus large, strongly curved dorso-ventrally, with large, spoon-shaped apical lobe and very long, whip-shaped flagellum, which far extending beyond apical orifice.

Differential diagnosis

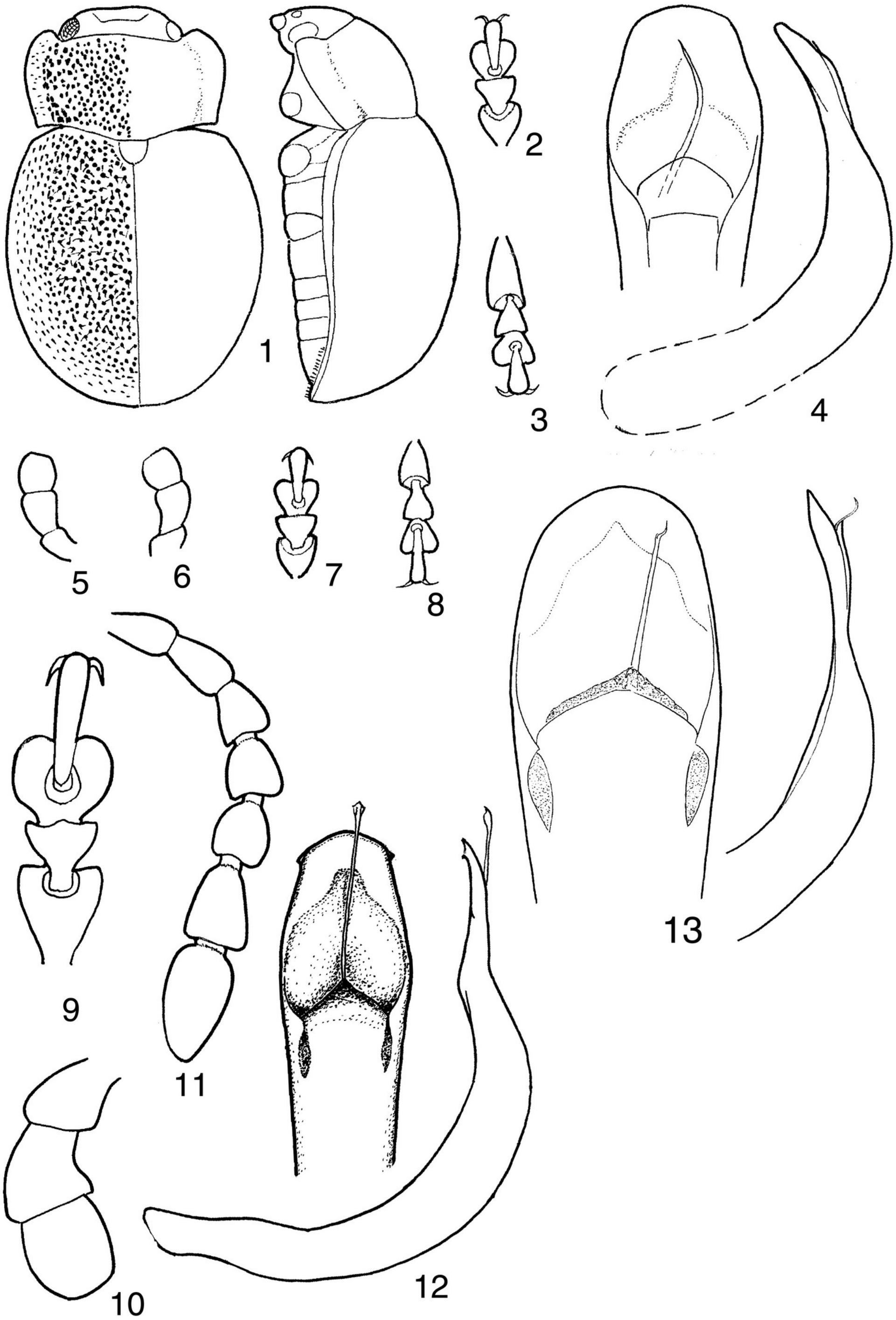
Medvedevlevna is morphologically very close to *Chrysocrosita*, especially, *Ch. fuyunica*, *Ch. nikolskyi, Ch. spectabilis,* and differs from them in male aedeagus different, bearing large, spoon-shaped apical lobe and very long, whip-shaped flagellum, and in female tarsomeres 1 without broad glabrous stripe beneath.

Key to species

The species are rather close externally. The examination of aedeagus structure is necessary for the precise identification.

1(2) Pygidium with weak longitudinal medial impression, developed in basal ½ only. Aedeagus without apical denticles and prominence on the underside before apex, with flagellum pointed apically. Dorsum dull, black with weak violet sheen on lateral sides of head, pronotum, and elytra; scutellum and maxillary palpi violet; underside including elytral epipleura, and legs violet, moderately shining; antennae violet with antennomeres 1 and 2 reddish apically on underside; pygidium black basally and violet apically. Length: 7.5–8.8 mm (male), 9.2 mm (female). Figs. 1–8, 13. China (Sichuan).
Ch. pudica L.Medvedev, 1970

2(1) Pygidium with distinct longitudinal medial furrow along almost entire length except near apex. Aedeagus with two fine apical denticles and prominence on the underside before apex, with flagellum broadened apically. Dorsum differently colored: 1) dull, black, usually with very weak violet or bronze sheen, with more distinct violet sheen on lateral sides of head, pronotum, and elytra; maxillary palpi, underside including elytral epipleura, and legs moderately shining, violet; antennae violet with antennomeres 1 and 2 reddish apically on underside; pygidium brown basally and violet apically; specimens from alpine meadows, 3375–4500 m above sea level; 2) body bright green, moderately shining, with antennomeres 1 and 2 reddish apically on underside; specimens mostly from forest, 2900–3530 m above sea level. Length: 7.5–8.3 mm (male), 8.7–9.7 mm (female). Figs. 9–12. China (S Gansu, Sichuan).
Ch. sergeyi Lopatin, 2009



***Medvedevlevna* figures 1–13:** 1–8 – *Chrysolina pudica* (China: Sichuan): 1–5 – male: 1 – dorsal and lateral view, 2 – fore-tarsus, 3 – hind-tarsus, 4 – aedeagus, dorsal and lateral view, 5 – maxillary palpus; 6–8 – female: 6 – maxillary palpus, 7 – fore-tarsus, 8 – hind-tarsus; 9–12 – *Ch. sergeyi,* male (holotype, China: Gansu): 9 – fore-tarsus, 10 – maxillary palpus, 11 – 6–11th antennomeres, 12 – aedeagus, dorsal and lateral view; 13 – *Ch. pudica*, male (holotype *Ch. mikhailovi* Lopatin, China: W Sichuan), aedeagus, dorsal and lateral view. (Orig.)

Subgenus *Melasomoptera* Bechyné, 1950a

Diagnosis

Head, antennae, palpi, pronotum, scutellum, legs, and underside metallic (green, blue, violet), or black with metallic sheen, or purely black; elytra red or rufous, sometimes with very weak metallic sheen.

Last maxillary palpomere similar in both sexes. It is oval, obliquely truncate apically, similar to the penultimate one in length and width.

Antenna inserted closer to clypeus than to eye, narrow, long.

Pronotum broadest basally or before base, moderately swollen laterally along entire length. Lateral impression broad and rather deep along entire length (in *Ch. grossa*) or obsolete to absent (in the others); impression covered by large, partly coalescent punctures. Pronotal disc densely finely punctulate and covered with more or less dense larger punctures. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore present.

Prothoracic hypomeron almost flat to weakly convex, laterally without distinct impression, but with distinct wrinkles; with outer border or without it. Basal fold strong. Intercoxal prosternal process with shallow medial impression, covered by large punctures.

Metasternum entirely marginated anteriorly.

Elytron with weak humeral callus. Elytral puncturation mostly irregular; several rows can be traced among confuse punctures. Intervals flat, shining, covered by numerous very fine punctures.

Elytral epipleura horizontal in apical ⅓, invisible there in lateral view, densely ciliate near apex.

Hind wings normally developed.

Tarsi narrow in both sexes; fore- and mid-tarsomeres 1–3 slightly broader in male than in female. Tarsomeres 1–3 with entire sole. Claw tarsomere without denticles beneath.

Pygidium with deep furrow along entire length except near apex (in *Ch. grossa*) or in basal ½ only (in the others).

Last abdominal sternite weakly convex and margined with narrow furrow along apical margin in both sexes, with shallow longitudinal medial impression in males of *Ch. lutea* and *Ch. lucida*, with apical margin broadly truncate (in male of *Ch. grossa*), bisinuate (in male of the others), rounded in female.

Aedeagus tube-shaped, curved dorso-ventrally, with apex simple, rounded or truncate. Flagellum simple or complicated apically, exposed.

Differential diagnosis

The members of the Western Mediterranean subgenus *Melasomoptera* are well different from the most taxa inhabiting this region, because of their contrasting coloring. They externally look like the species of the subgenus *Erythrochrysa* and differ from them in the elytral epipleura horizontal in apical ⅓, invisible there in lateral view. *Melasomoptera* is probably taxonomically close to *Synerga* and differs in elytra red or rufous.

Key to species and subspecies

1(4) Pronotum with broad, deep lateral impression covered with numerous large punctures along entire length. Prothoracic hypomeron without outer border.

2(3) Head, pronotum, scutellum, legs, and underside metallic: blue, bluish green, green, or golden green. Length 8.7–11.2 mm. Figs. 1–6. S Europe, N Africa.
Ch. grossa grossa (Fabricius, 1792)

3(2) Head, pronotum, scutellum, legs, and underside pure black or black with very weak metallic blue sheen. Length 7.5–10.1 mm. N-W Spain, Portugal.
Ch. grossa chloromaura (Olivier, 1807)

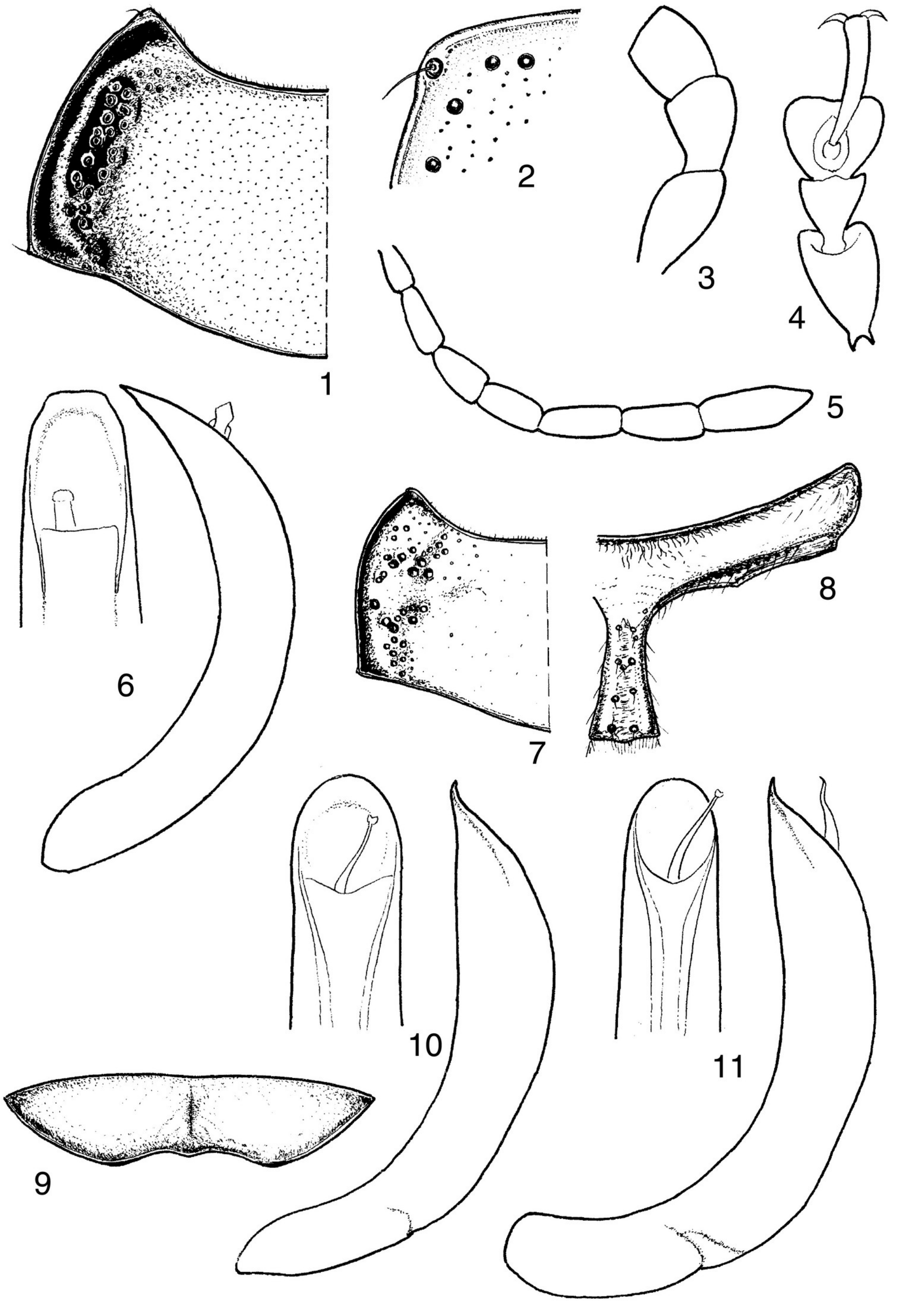
4(1) Pronotum without lateral impression or with only obsolete impression, with numerous large punctures along entire length laterally. Prothoracic hypomeron with distinct outer border.

5(6) Head and pronotum black, usually weakly shining and bearing weak but distinct metallic blue or violet sheen. Pronotal disc covered with dense, double (very fine and moderately large) puncturation. Aedeagus shorter, 2.2–2.3 mm long, apically roundly-truncate, with flagellum short, barely protruding from the apical orifice, complicated. Length 8.3–11.0 mm. Figs. 13, 14. S Europe, Sicily, Corfu, Cyprus.
Ch. lutea (Petagna, 1819)

6(5) Head and pronotum black, shining, without distinct metallic sheen. Pronotal disc covered with dense very fine punctures and sparse moderately large ones. Aedeagus longer, 3.1–3.4 mm long, apically perfectly rounded, with flagellum simple, whip-shaped, exposed.

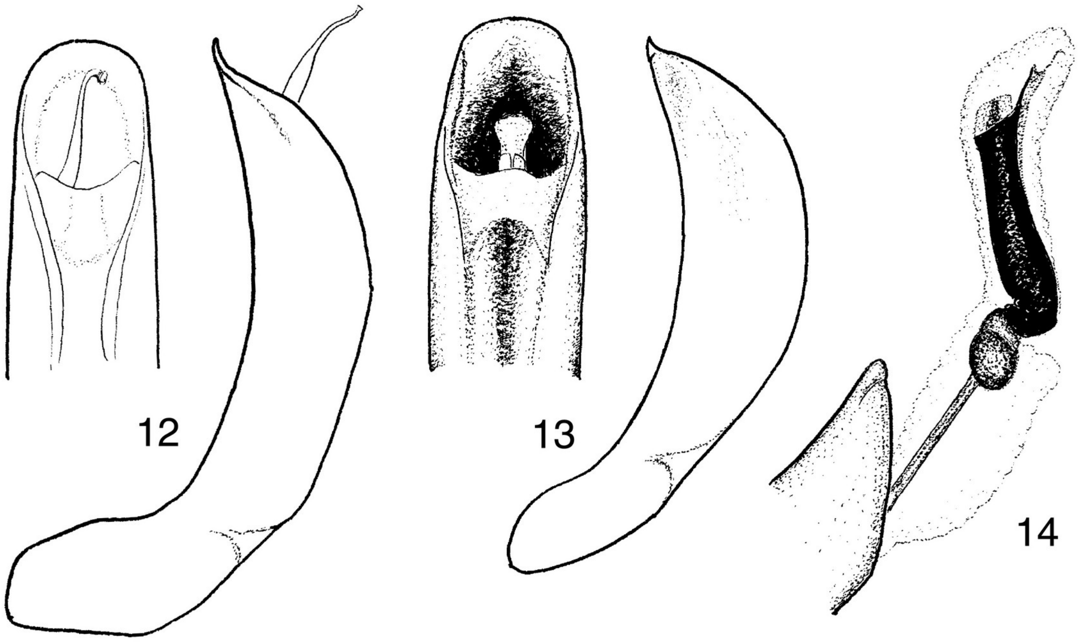
7(8) Pronotum without moderately large punctures along base. Length 8.0–10.5 mm. Figs. 7, 8, 11. S France, N Spain, Italy.
Ch. lucida lucida (Olivier, 1807)

7(8) Pronotum with more or less numerous moderately large punctures along base. Length 7.0–10.5 mm. Figs. 9, 10, 12. S, E Spain.
Ch. lucida torresi Bechyné, 1950a



***Melasomoptera* figures 1–11:** 1–6 – *Chrysolina grossa grossa*, male (Italy): 1 – pronotum, 2 – left anterior pronotal angle with setiferous pore, 3 – maxillary palpus, 4 – fore-tarsus, 5 – antenna, 6 – aedeagus, dorsal and lateral view; 7–8 – *Ch. lucida lucida*, female (*Chrysolina lucidula*, holotype): 7 – pronotum, 8 – prosternum; 9–10 – *Ch. lucida torresi*, male (paratype, Spain: Valencia): 9 – last abdominal sternite, 10 – aedeagus, dorsal and lateral view;

11 – *Ch. lucida lucida*, male (S. France), aedeagus, dorsal and lateral view. (Orig.)



***Melasomoptera* figures 12–14:** 12 – *Chrysolina lucida torresi*, male (topotype *Ch. lucida suarezi*, Spain: Almeria, Laujar), aedeagus, dorsal and lateral view; 13–14 – *Ch. lutea*, male (Italy): 13 – aedeagus, dorsal and lateral view, 14 – flagellum, lateral view. (Orig.)

Subgenus *Naluhia* Bechyné, 1948a

Diagnosis

Body differently colored. There are two main types of dorsal coloration: 1) head entirely rufous or with black (metallic) spots, pronotum entirely rufous or with symmetrical black (metallic) pattern, elytra rufous with numerous asymmetrical (!) black (metallic) spots, sometimes coalescent to each other; 2) head and pronotum as in "1)", elytra black (or blue, green) margined with broad, lobate rufous stripe laterally, the rufous stripe usually covered with black (or blue, green) spots, asymmetrical on left and right elytron. Besides these main types, there are two rare types of dorsal coloration: 3) head and pronotum as in "1)", elytra entirely metallic green, 4) dorsum entirely bronze or brown with bronze sheen.

Last maxillary palpomere similar in both sexes. It is obliquely truncate apically, as wide as the penultimate one or 1.1–1.2 X narrower than latter.

Antenna inserted closer to clypeus than to eye; short, reaching elytral base; with antennomeres 7–11 strongly broadened.

Orbital grooves distinct, long, reaching the clypeus or almost so.

Pronotum broadest basally, weakly swollen laterally along entire length. Lateral impression absent or very shallow, displaced close to lateral margin. Pronotum covered laterally with large punctures, which mostly spread along base. Pronotal disc densely finely punctate. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore present.

Prothoracic hypomeron flat, shining, without wrinkles, with deep lateral furrow margined by vertical outer border along entire length. Basal fold weak or absent. Intercoxal prosternal process with wide, wrinkled medial impression.

Metasternum marginated anteriorly between mid-coxae.

Elytron with distinct or weak humeral callus. Elytral puncture rows regular, distinct, equidistant in the most species; and only in *Ch. acervata* the elytral punctures mostly irregular, partly arranged in indistinct rows. Intervals flat or barely convex, shining or dull, covered by numerous fine punctures.

Elytral epipleura horizontal in apical ½, invisible there in lateral view, densely ciliate posteriorly and sometimes sparsely ciliate up to elytral base in *Ch. nigromaculata* only.

Hind wings normally developed.

Tarsi: tarsomeres 1–3 entirely pubescent beneath in both sexes; in male all tarsomeres 1 and 3 (or only 1st) broader than in female. Claw tarsomere without denticles beneath.

Pygidium with weak medial impression in basal ½ only.

Last abdominal sternite weakly convex and margined with narrow furrow along apical margin; with apical margin rounded in female and bisinuate in male.

Aedeagus tube-shaped, rather curved dorso-ventrally, with apex triangular or bilobed. Flagellum simple, barely exposed.

Differential diagnosis

Most specimens of the subgenus *Naluhia* are easily recognizable because of the bicolor elytra (black or metallic with rufous) with distinctly asymmetrical pattern. Some specimens of *Ch. simonsi* and *Ch. nigromaculata* with rufous head and pronotum and wholly metallic green elytra can be easily distinguish from any other Central African *Chrysolina* species because of the mentioned coloration. The rare bronze, green, or brown (with bronze sheen) variation of *Ch. nigromaculata* looks like the members of the subgenus *Ghesquiereita*, from which it differs in hind wings normally developed, large elytral punctures forming equidistant, not paired (!) rows, elytral epipleura invisible laterally in apical part, last maxillary palpomere short, and orbital lines long, reaching clypeus.

Key to species and subspecies

The species of the subgenus *Naluhia* are very variable in body size, shape, elytral puncturation, and coloration. The examination of male aedeagus is necessary for the precise identification.

1(2) Elytral puncture rows mostly irregular, consist of fine punctures which are barely visible among dense, irregular puncturation in intervals. Dorsum rufous with black spots. Aedeagus roundly-triangular at the apex. Length 7.5 mm (male), 8.3 mm (female). Figs. 18–20. C, S Africa. *Ch. acervata* Bechyné, 1948a
2(1) Elytral puncture rows regular (only 5th and 6th rows sometimes irregular), clearly visible.
3(7) Elytral rows consist of equal punctures or almost so.
4(5,6) Legs entirely rufous. Aedeagus rounded apically and bearing small pointed apical projection. Dorsal coloration: types "1" and "2" (see diagnosis of the subgenus). Length 6.3– 8.3 mm (male), 7.7–9.7 mm (female). Figs. 1–10. C, S Africa.
Ch. confluens (Gerstaecker, 1855)

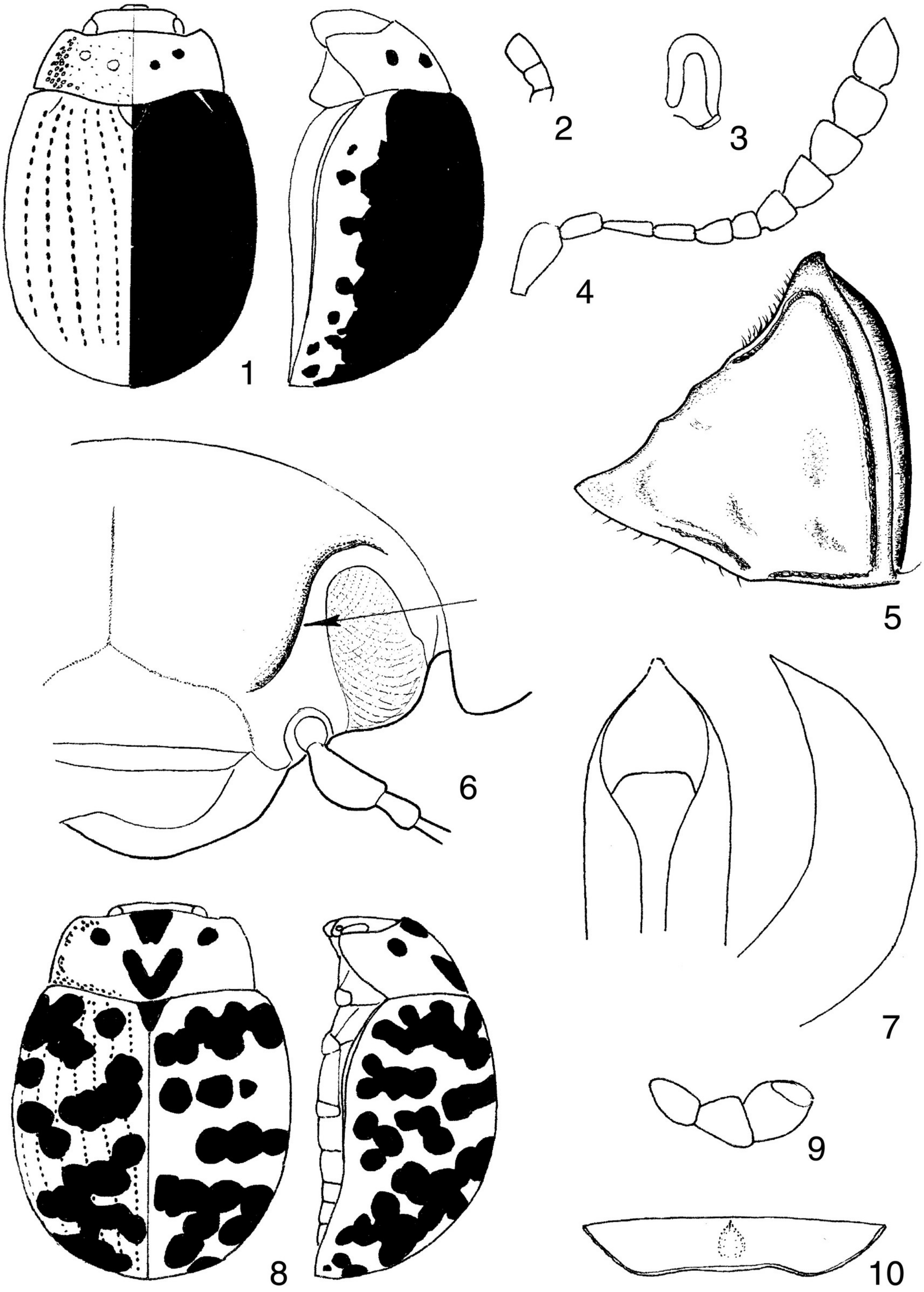
5(4,6) Legs entirely black or rufous with black tarsi. Aedeagus bilobed apically. Dorsal coloration: types "1", "2", or "3" (see diagnosis of the subgenus). Length 7.9–8.9 mm (male), 8.3– 9.3 mm (female). Figs. 11–17. C, S Africa. *Ch. simonsi* (Baly, 1878a)

6(4,5) Legs black or brown with tarsi blackish. Aedeagus elongate-triangular apically. Dorsal coloration: type "1" or "3" (see diagnosis of the subgenus). For identification of the subspecies see couplets 8 and 9. C, S Africa.
Ch. nigromaculata (Quedenfeldt, 1888)

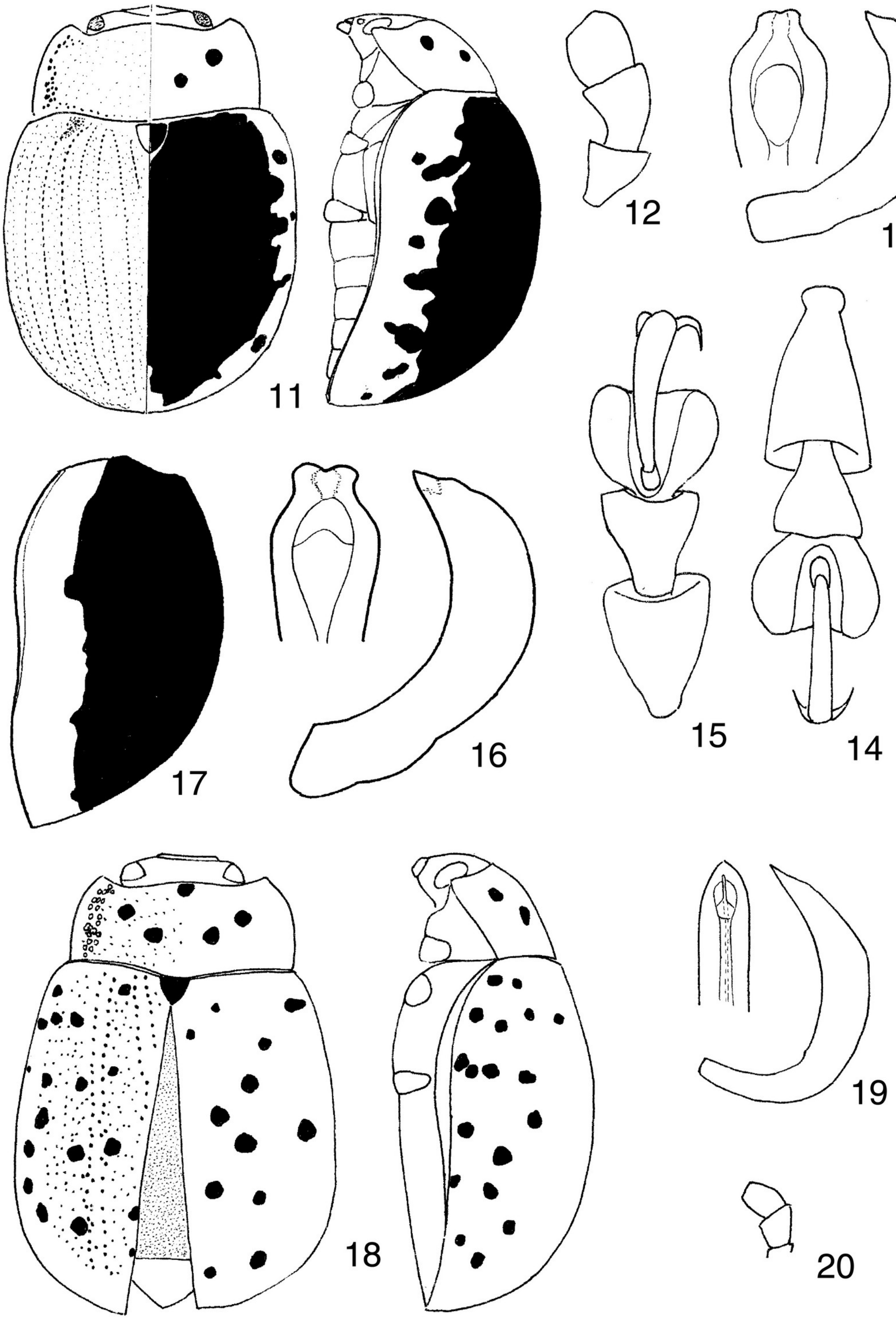
7(3) Elytral rows consist of punctures, which displaced at different distances from each other and very different in size, sometimes coalescent to each other forming short longitudinal furrows. Legs brown with tarsi blackish.

8(9) Apical triangle of aedeagus shorter. Dorsal coloration: types "1", "2", "3", or "4" (see diagnosis of the subgenus). Length 6.7 mm (male), 7.7–8.5 mm (female). Figs. 27–29. C, S Africa.
Ch. nigromaculata nigromaculata (Quedenfeldt, 1888)

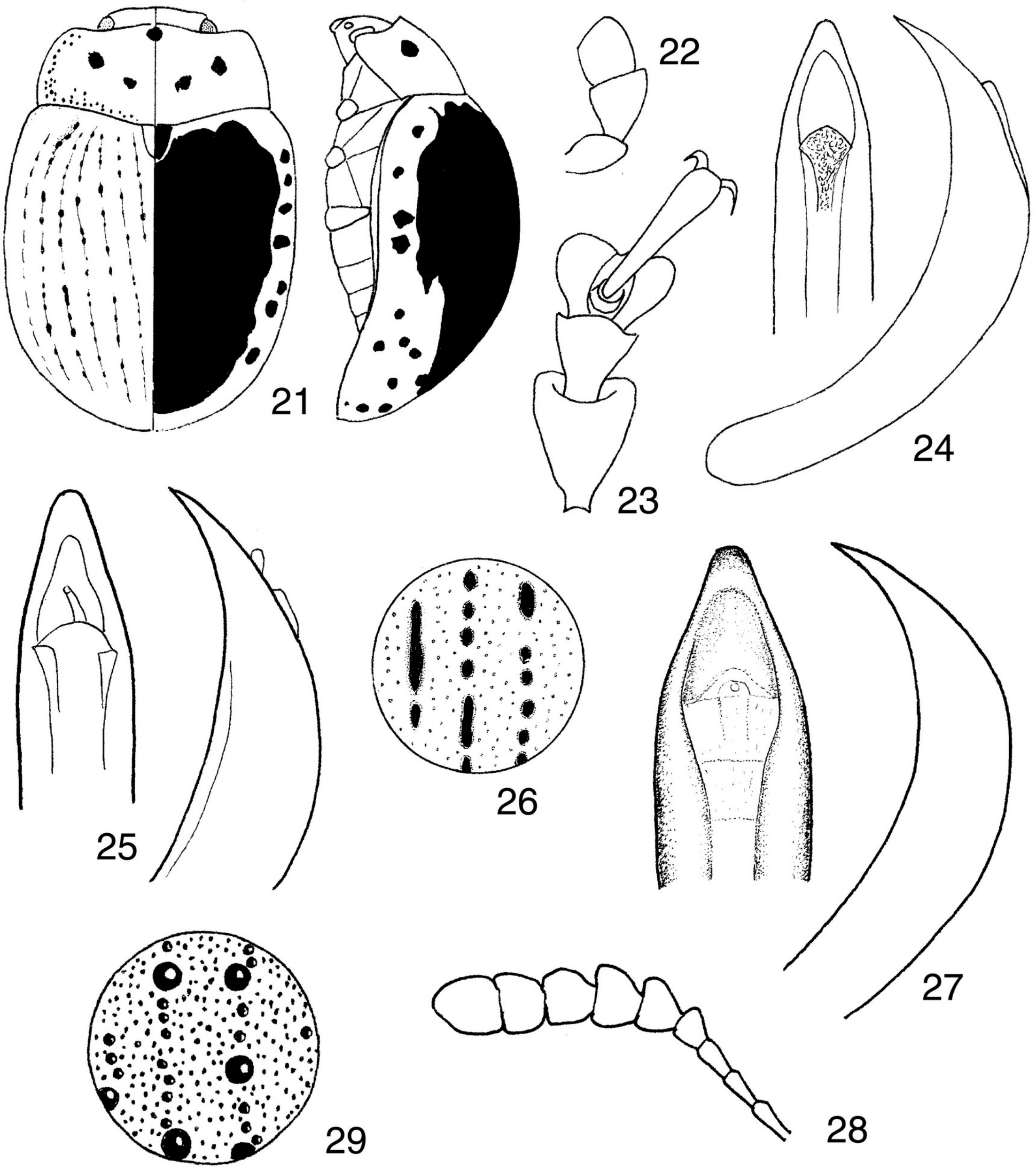
9(8) Apical triangle of aedeagus longer. Dorsal coloration: types "1", "2", or "4" (see diagnosis of the subgenus). Length 7.7–8.2 mm (male), 7.9–9.9 mm (female). Figs. 21–26. East part of C Africa. *Ch. nigromaculata verhulsti* (Burgeon, 1941)



***Naluhia* figures 1–10:** *Chrysolina confluens*: 1–3 – female (Malawi: Chicangawa): 1 – total dorsal and lateral view, 2 – maxillary palpus, 3 – spermatheca; 4 – female (Zimbabwe: Mutare), antenna; 5 – female (Ethiopia: Omo), prothoracic hypomeron; 6 – male (Sudan: West Darfur), head, orbital line marked with arrow; 7–9 – male (S-E Ethiopia): 7 – aedeagus, 8 – total dorsal and lateral view, 9 – maxillary palpus; 10 – male (Zimbabwe: Mutare), last abdominal sternite. (Orig.)



***Naluhia* figures 11–20:** 11–17 – *Chrysolina simonsi*: 11–15 – male (Zimbabwe: Mutare): 11 – total dorsal and lateral view, 12 – maxillary palpus, 13 – aedeagus, dorsal and lateral view, 14 – hind-tarsus, 15 – fore-tarsus; 16 – male (Tanzania: Kigonsera), aedeagus, dorsal and lateral view; 17 – female (DR Congo: Sud-Ubangi), left elytron, lateral view; 18–20 – *Ch. acervata*, male (Namibia: Caprivi): 18 – total dorsal and lateral view, 19 – aedeagus, dorsal and lateral view, 20 – maxillary palpus. (Orig.)



***Naluhia* figures 21–29:** 21–26 – *Chrysolina nigromaculata verhulsti*: 21–24 – male (Tanzania: Morogoro): 21 – total dorsal and lateral view, 22 – maxillary palpus, 23 – fore-tarsus, 24 – aedeagus, dorsal and lateral view; 25 – male (DR Congo: Kiwu), aedeagus, dorsal and lateral view; 26 – female (Tanzania: Kigonsera), elytral punctures; 27–29 – *Ch. nigromaculata nigromaculata*: 27–28 – male (Angola: Huambo Prov.): 27 – aedeagus, dorsal and lateral view, 28 – antenna; 29 – female (Angola: Benguela), elytral punctures. (Orig.)

Subgenus *Omolina* Weise, 1909

Daccordi (1994) noted that *Omolina* is included in the genus *Chrysolina* by despite the absence of setae at elytral epipleura. However, this statement regarding the setae is incorrect. *Ch.* (*Omolina*) *sjostedti* specimens from M. Daccordi collection, examined by me, have setae on elytral epipleura as in most other *Chrysolina* members. This subgenus consists of only one species, *Ch.* (*O.*) *sjostedti* (Weise, 1909). This species has not been studied by anyone since the first finding; any recent redescriptions or figures and photos are absent in literature. The present diagnosis is based on Weise (1909), examination of the syntypes (male and female, by photos) and additional specimens.

Diagnosis

Body oval, moderately constricted laterally between pronotum and elytra, weakly convex (Figs. 1, 2). Body bright reddish brown; head, pronotum, scutellum, and elytra with strong metallic brassy green or coppery green reflection, smooth, very shining; antennae and legs rufous with antennomeres 6–11 and sometimes tarsi piceous.

Last maxillary palpomere oval, narrowly truncate at apex, slightly narrower than penultimate one, as long as the latter, similar in both sexes (Fig. 5).

Antenna rather thin, with 7–11th antennomeres slightly broadened (Fig. 1). Antennal insertion 2 X closer to clypeus than to eye. Orbital grooves developed above eye and along inner border of eye, not reaching antennal insertion. Eye vertical oval.

Pronotum strongly transverse, 2 X as broad as long, with lateral sides rounded in anterior ½ and almost straight in posterior ½, more constricted forward than backward, with sharp posterior angles; with weakly convex lateral calli, separated from disc by broad weak (to obsolete) impression, covered by numerous but sparse, moderately large punctures. Pronotal disc sparsely finely punctate. Anterior side of pronotum marginated, with numerous sparse setae. Anterior and posterior setiferous pores present.

Prothoracic hypomeron smooth, slightly convex, without impression and wrinkles laterally. Basal fold absent. Intercoxal prosternal process wrinkled, with lateral borders. Anterior portions of prosternum broad, almost flat, marginated posteriorly (Fig. 6). Anterior coxal cavities opened behind.

Metasternum with anterior side marginated at most part, immarginated only on the very middle of the anterior process (Fig. 4).

Elytron with obsolete humeral callus. At the level of humeral angles, elytra as wide as pronotal base. Elytron with 10 rows of moderate punctures (Fig. 1).

Rows are not very regular, 1st and 10th rows single, others paired. Punctures in rows numerous, dense. Intervals mostly flat, only interval between 8th and 9th rows very slightly convex because of these rows are slightly deepened; intervals covered by sparse fine punctures. Sutural furrow shallow.

Elytral epipleura with dense short setae at apex. Epipleura almost horizontal in apical ½ and invisible there in lateral view.

Hind wings very reduced, as long as metathorax, narrow.

Legs rather thin. Tibiae without projection near apex. Tarsomere 3 slightly emarginated apically. Claws simple. Tarsomeres 1–3 entirely pubescent beneath, narrow, similar in male and female. Claw tarsomere without denticles beneath.

Pygidium with only weak medial impression in basal ½.

Male last abdominal sternite flattened and medially slightly depressed, with apical margin broadly truncate.

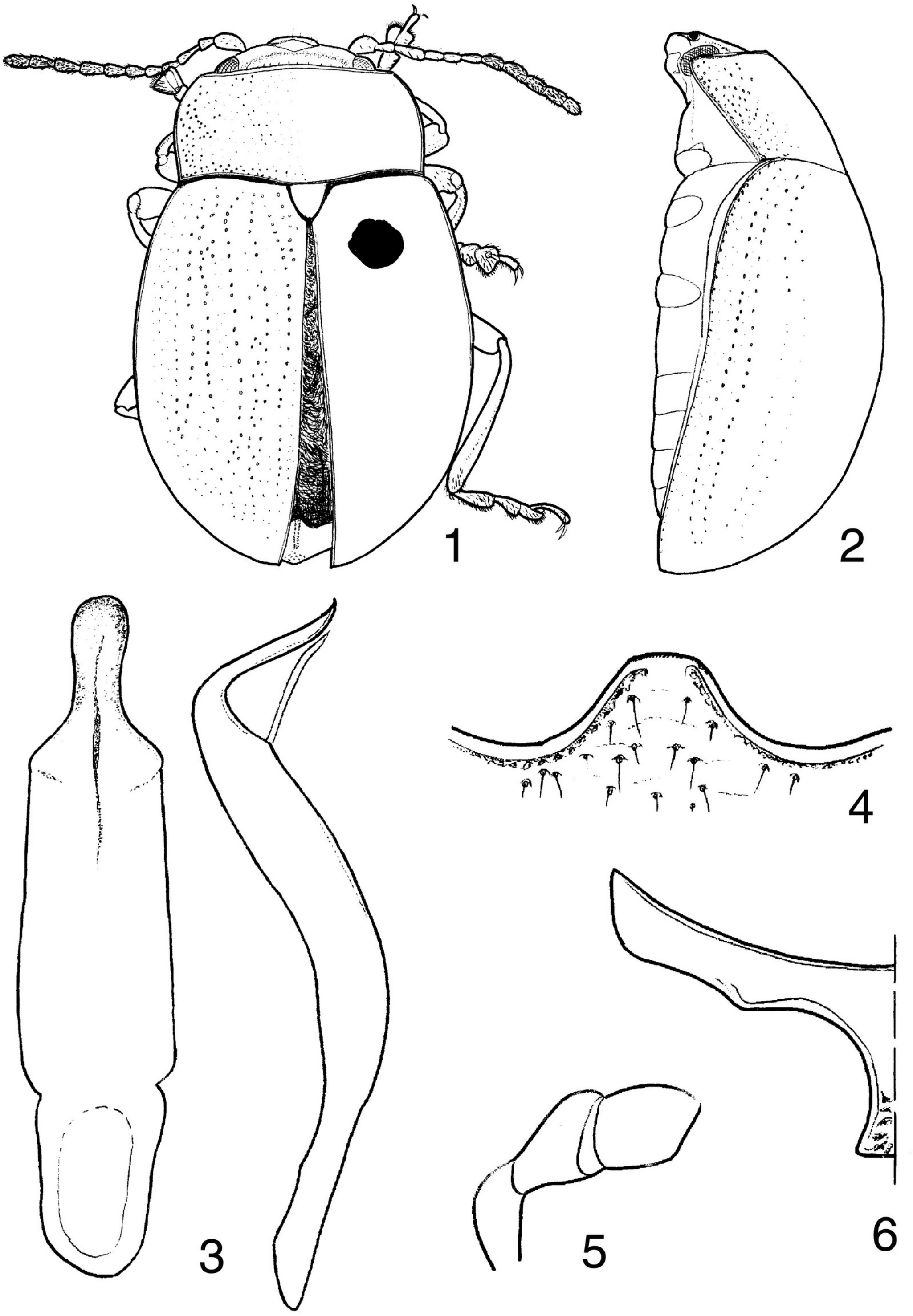
Aedeagus (Fig. 3) tube-shaped, slightly curved dorso-ventrally, with narrow, long apical process which bent upwards at right angle. Flagellum thin, exposed.

Body length 5.0–6.0 mm.

Differential diagnosis

The author (Weise, 1909) compared the new taxon with only *Plagiosterna* (= *Linaeidea*) *aenea* by the similar body shape. He does not specify any differences of *Omolina* from any other taxa. In fact, *Omolina* is not at all like *Plagiosterna,* because the former is more convex in lateral view, with convex pronotum.

The single member of the subgenus *Omolina, Ch.* (*O.*) *sjostedti* (Weise, 1909) from Tanzania is characteristic by the combination of the following characters: body brown with dorsal side strongly metallic shining, unicolorous, antennae and legs rufous, moderately large punctures at pronotal lateral sides present, apical ½ of elytral epipleura invisible in lateral view, elytral epipleura with setae, elytral punctures mostly arranged in paired rows, pronotal lateral sides convex, 4th tarsomere without denticles, hind wings very reduced, metasternum anteriorly immarginated on the very middle. Figs. 1–6.



***Omolina* figures 1–6:** *Chrysolina sjostedti*, male (syntype, Tanzania: Kilimandjaro Mt.): 1 – dorsal view, 2 – lateral view, 3 – aedeagus, ventral and lateral view, 4 – anterior projection of metasternum, 5 – maxillary palpus, 6 – prosternum. (Orig.)

Subgenus *Ovosoma* Motschulsky, 1860a

Diagnosis

Dorsum metallic (bronze, violet, blue, green, coppery) or black, unicolorous or with elytral punctures margined with violet (purple) aureole. Ventral side and legs dark metallic or black, shining.

Last maxillary palpomere narrow, slightly longer than wide, obliquely truncate apically, as wide as penultimate one or some larger than latter, similar in both sexes or slightly broader in male than in female.

Antenna inserted closer to clypeus than to eye, with antennomeres 7–10 slightly broadened.

Pronotum broadest basally, with lateral sides arc-shaped or straight, convergent in the forward direction, swollen laterally along entire length, in the most species with narrow lateral furrow (deep to shallow) in basal ⅓, and with shallow impression (with or without large punctures) or without any impression in anterior ⅔–¾; in one species (*Ch. susterai*) with distinct narrow lateral furrow along entire length. Pronotal disc finely to obsoletely punctate. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore absent.

Prothoracic hypomeron convex, laterally without outer border, with or without shallow lateral impression, with transverse wrinkles laterally. Basal fold strong. Intercoxal prosternal process with longitudinal medial impression along entire length in the most species, convex in one species, *Ch. sahlbergii*.

Metasternum entirely marginated anteriorly.

Elytron with humeral callus obsolete to absent. Elytral puncturation different: 1) punctures dense, entirely or mostly confuse, or 12–14 irregular rows can be traced, 2) punctures arranged in 9 complete regular rows (besides abbreviated scutellar row) of dense or sparse punctures; rows sometimes hardly visible.

Elytral epipleura inclined outside, visible along entire length in lateral view, ciliate near apex.

Hind wings differently developed: 1) normal, longer than elytron, 2) slightly reduced, narrower, reaching abdominal apex, 3) reduced, narrow, as long as ½ elytral length, 4) very reduced, as long as metathorax.

Tarsomeres 1–3 with entire sole in both sexes; they broad in male (especially in fore- and mid-tarsi), narrow in female. Claw tarsomere without denticles beneath.

Pygidium with distinct longitudinal furrow along entire length.

Last abdominal sternite apically marginated, in male more or less impressed medially in apical part; in female evenly convex or weakly impressed in apical part.

Aedeagus large, with apex very complicated, bearing broad or narrow apical lobe, S-curved in lateral view. Flagellum absent.

Differential diagnosis

The members of this subgenus are well characterized because of a very remarkable aedeagus structure (See "Diagnosis"). Externally, *Ch.* (*Ovosoma*) *vernalis cantabrica* looks like sympatric *Ch.* (*Maenadochrysa*) *affinis vicinitatis* and *Ch.* (*Maenadochrysa*) *femoralis rufofemorata* (See "Differential diagnosis" of the subgenus *Maenadochrysa*). *Ch.* (*Ovosoma*) *sahlbergii* externally resemblances *Ch.* (*Bittotaenia*) *compuncta, Ch.* (*Bittotaenia*) *salviae* (some color variations), and *Ch.* (*Centoptera*) *bicolor* and differs in all tarsomeres 1–3 entirely pubescent beneath in both sexes and pronotal lateral impression deep, narrow in basal ⅓ and very shallow to absent in anterior ⅔.

Key to species and subspecies

1(2) Pronotal lateral furrow narrow, with sharp outer border along entire length, deepened basally. Dorsal side moderately shining, black, usually with bronze or golden sheen. Elytron with 9 paired rows of sparse, moderately large punctures; rows sometimes hardly visible. Hind wings normally developed. Male tarsomeres 1–3 slightly broadened. Apex of aedeagus strongly S-shaped (viewed laterally), with short apical lobe which as wide as 0.5 X aedeagus width. Length 6.8–8.8 mm. Figs. 46–50. Europe, N Caucasus, Kazakhstan, Altai.
Ch. susterai Bechyné, 1950a

2(1) Pronotal lateral furrow presents in basal ⅓–½ only, differently developed: from deep to shallow, obsolete (to absent).

3(20) Elytral punctures dense, entirely or mostly confuse, or 12–14 irregular rows can be traced. Hind wings strongly reduced, less than ½ elytral length.

4(19) Apical lobe of aedeagus at least as wide as 0.7 X aedeagus width or broader.

5(14) Apex of aedeagus strongly S-shaped curved (viewed laterally), with basal margin of apical opening bearing 2 triangular denticles closely placed to each other. The following are the different subspecies of *Ch. vernalis* (Brullé, 1832).

6(9) Beetles from E Mediterranean basin (from Italy to Asia Minor). Body usually larger, 7.9–11.1 mm long. Hind wings very short, as long as metathorax. Dorsal side shining, or sericeous, or dull. Male tarsomeres 1–3 broadened.

7(8) Dorsal side mostly blue, more rarely bluish green, golden green, bronze green, or coppery. Length 7.9–10.9 mm. S and S-E Europe, Asia Minor, N Africa (?), Lebanon(?), Azerbaijan (?).
Ch. vernalis vernalis (Brullé, 1832)

8(7) Dorsal side mostly bluish green or golden green, rarely blue. Length 8.6–11.1 mm. Fig. 12. Corfu Isl.
Ch. vernalis herii (Herrich-Schaeffer, 1839)

9(6) Beetles from S France and Spain. Body usually smaller, 7.1– 9.5 mm long. Hind wings about as long as ½ elytral length. Male tarsomeres 1–3 strongly broadened.

10(13) Pronotal lateral furrows weak, obsolete or absent.

11(12) Dorsal side mostly black, rarely dark blue. Elytral surface moderately or obsoletely wrinkled. Length 7.6–9.5 mm. Figs. 11, 13–20. C Pyrenees, Catalonia, S France.
Ch. vernalis pyrenaica (Dufour, 1843)

12(11) Dorsal side mostly dark blue, rarely black. Elytral surface obsoletely wrinkled. Length 8.0–10.0 mm. Spain (Navarra).
Ch. vernalis egelida Bechyné, 1952b

13(10) Pronotal lateral furrows distinct. Dorsal side black. Elytral surface wrinkled distinctly, moderately or obsoletely. Length 6.4–9.0 mm. Figs. 21–30. N Spain (Asturias, Cantabria).
Ch. vernalis cantabrica (Heyden, 1870)

14(5) Apex of aedeagus moderately S-shaped curved (viewed laterally), with basal margin of apical opening bearing 2 denticles separated from each other. The following are the different subspecies of *Ch. atrovirens* (Frivaldszky, 1876).

15(18) Dorsal side dark bluish green, blue, golden green, or black with weak metallic sheen.

16(17) Apical lobe of aedeagus as wide as 0.9 X aedeagus width. Length 7.0–7.5 mm. Figs. 65–68. Romania: S Carpathians.
Ch. atrovirens atrovirens (Frivaldszky, 1876)

17(16)Apical lobe of aedeagus as wide as 0.7 X aedeagus width. Length 6.8–8.2 mm. Figs. 56–64. Bosnia.
Ch. atrovirens minckwitzi (Apfelbeck, 1912)

18(15) Dorsal side bronze. Apical lobe of aedeagus as wide as 0.8 X aedeagus width. Length 5.5–7.6 mm. Figs. 51–55. Albania, E Monenegro.
Ch. atrovirens winneguthi (G. Müller, 1948)

19(4) Apical lobe of aedeagus much narrower than aedeagus width. Dorsal side very shining, purely black. Pronotal disc distinctly minutely punctate; lateral furrows distinct in basal ⅓, replaced with large punctures anteriorly. Male tarsomeres 1–3 strongly broadened. Length 7.9–9.7 mm. Figs. 34–38. Turkey, E Bulgaria.
Ch. turca (Fairmaire, 1865)

20(3) Elytral punctures arranged in 9 complete regular rows besides abbreviated scutellar row.

21(22) Hind wings normally developed or slightly reduced, reaching elytral apex. Dorsal side moderately shining or dull, blue, bluish green, golden green, bronze green, or coppery; elytral punctures usually with violet aureole. Pronotal disc distinctly obsoletely punctulate; lateral furrows sharp, present in basal ⅓ only. Elytral rows consist of large, sparse punctures (8–15 ones in 5th row). Male tarsomeres 1–3 strongly broadened. Length 6.2–9.5 mm. Figs. 1–10, 70–72. Caucasus, Greece, Near East.

Ch. sahlbergii (Faldermann in Ménétriés, 1832)

22(21) Hind wings strongly reduced, not longer than ½ elytral length.

23(24) Elytral rows formed by dense fine punctures (4th row consists of 28–34 ones). Apical lobe of aedeagus narrow, hook-shaped, directed backwards. Dorsal side shining, bronze or greenish bronze. Pronotal disc distinctly finely punctate; lateral furrows present in basal ⅓, replaced by shallow impression covered by moderately large punctures in anterior ⅔. Male tarsomeres 1–3 strongly broadened. Length 6.3–7.5 mm. Figs. 40–45. Turkey.

Ch. wittmeri L.Medvedev, 1975

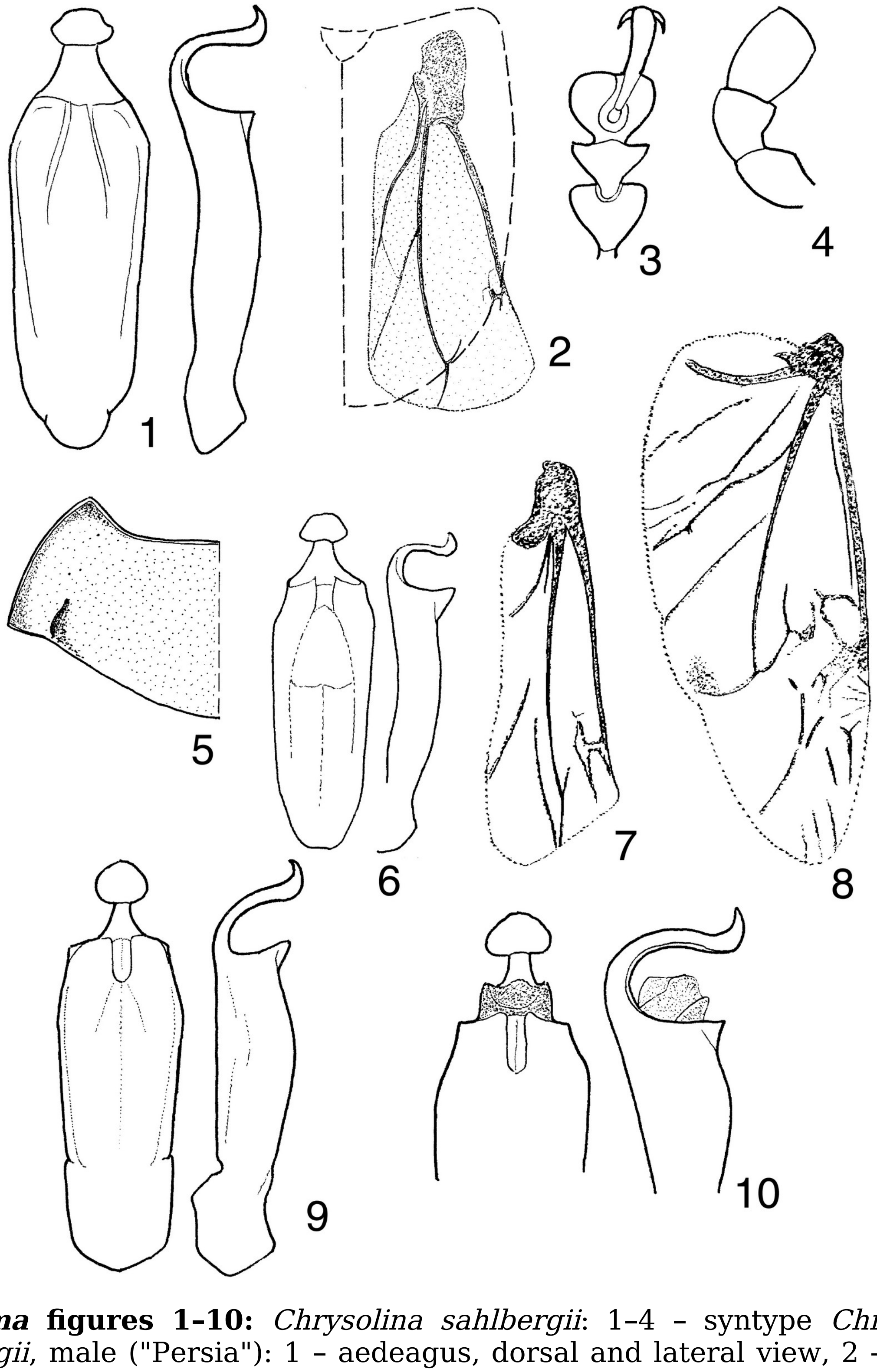
24(23) Elytral rows formed by sparse large, fovea-shaped punctures (4th row consists of 11–14 ones). Apical lobe of aedeagus broader, S-shaped.

25(26) Pronotal disc covered with very fine punctules, looks like impunctate, lateral impressions covered with large punctures in anterior ⅔. Apical lobe of aedeagus broad, similar to those in *Ch. vernalis*. Dorsal side shining or sericeous, violet, black, blue, bronze, or green. Pronotal lateral furrows present in basal ⅓, replaced by shallow impression in anterior ⅔. Male tarsomeres 1–3 strongly broadened. Length 8.0–10.1 mm. Fig. 39. Crete.

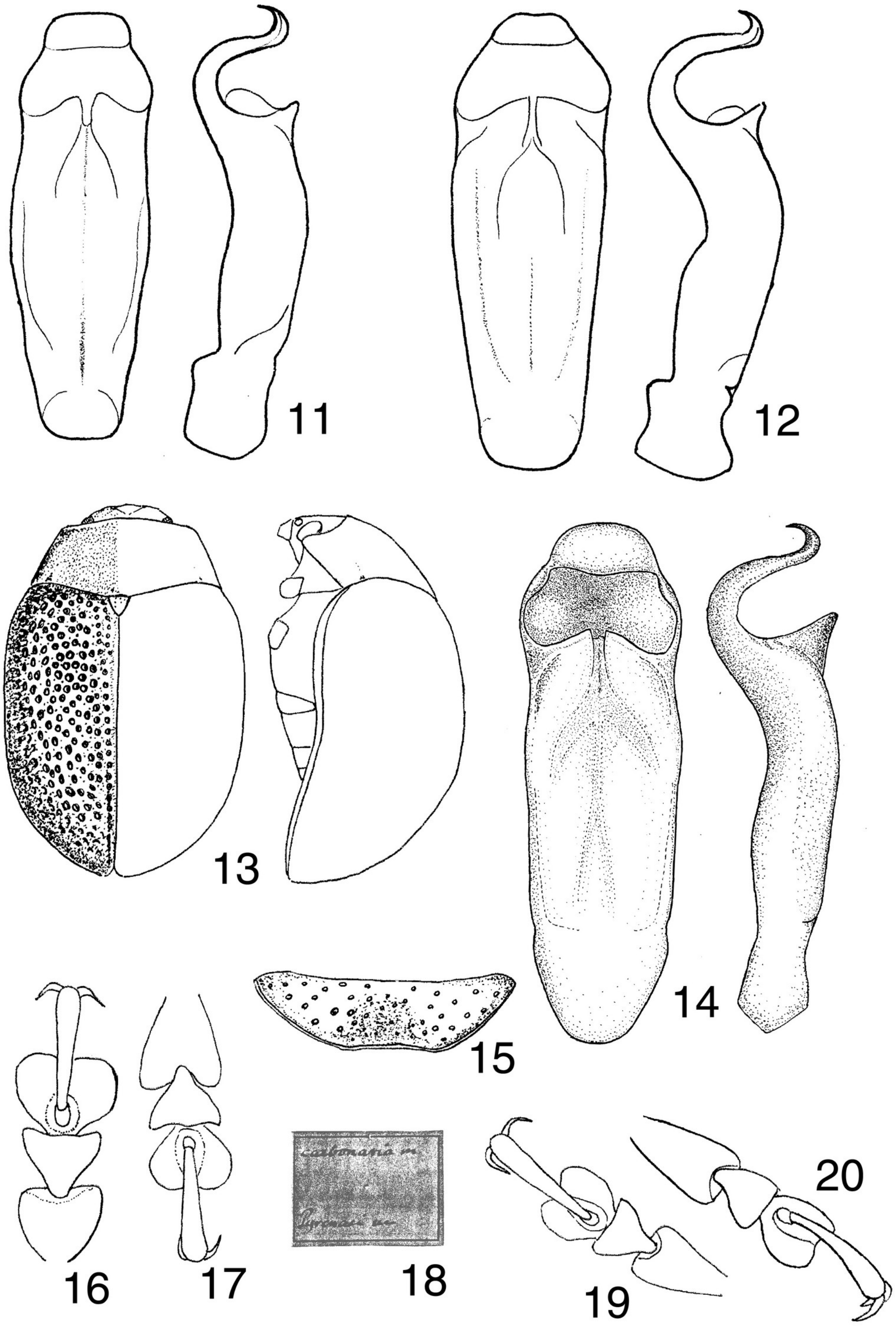
Ch. cretica (Olivier, 1807)

26(25) Pronotal disc covered with dense, fine, distinct punctures, lateral impressions without large punctures in anterior ⅔. Apical lobe of aedeagus 2 X narrower than aedeagus width. Dorsal side dull, dark golden green, with elytral large punctures bluish black margined with purple aureole. Pronotal lateral furrows deep, narrow in basal ⅓, replaced by broad shallow impressions in anterior ⅔. Male tarsomeres 1–3 strongly broadened. Length 10.0 mm (male). Figs. 31–33, 69. Turkey, Sicily.

Ch. orientalis (Olivier, 1807)

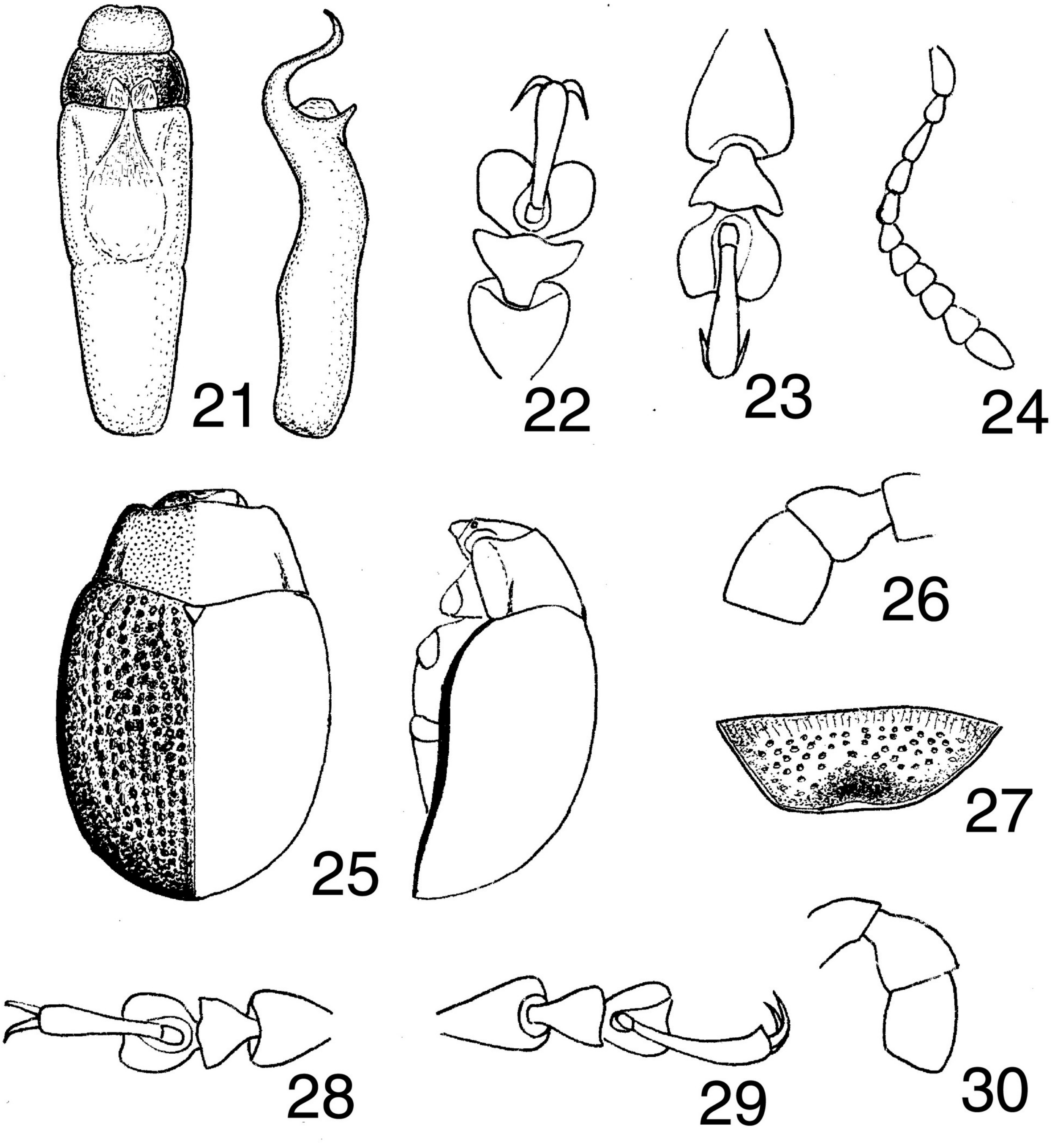


***Ovosoma* figures 1–10:** *Chrysolina sahlbergii*: 1–4 – syntype *Chrysomela sahlbergii*, male ("Persia"): 1 – aedeagus, dorsal and lateral view, 2 – elytron and hind wing, 3 – fore-tarsus, 4 – maxillary palpus; 5 – pronotum, female (Azerbaijan), 6 – aedeagus, dorsal and lateral view (Dagestan), 7–8 – hind wing, variability: 7 – female (Georgia), 8 – female (Azerbaijan), 9 – male (syntype *Chrysomela cupreopunctata*, "Palestina"), aedeagus, 10 – male (syntype *Chrysomela sahlbergii* var. *venefica*, "Jerusalem"), aedeagus. (Orig.)

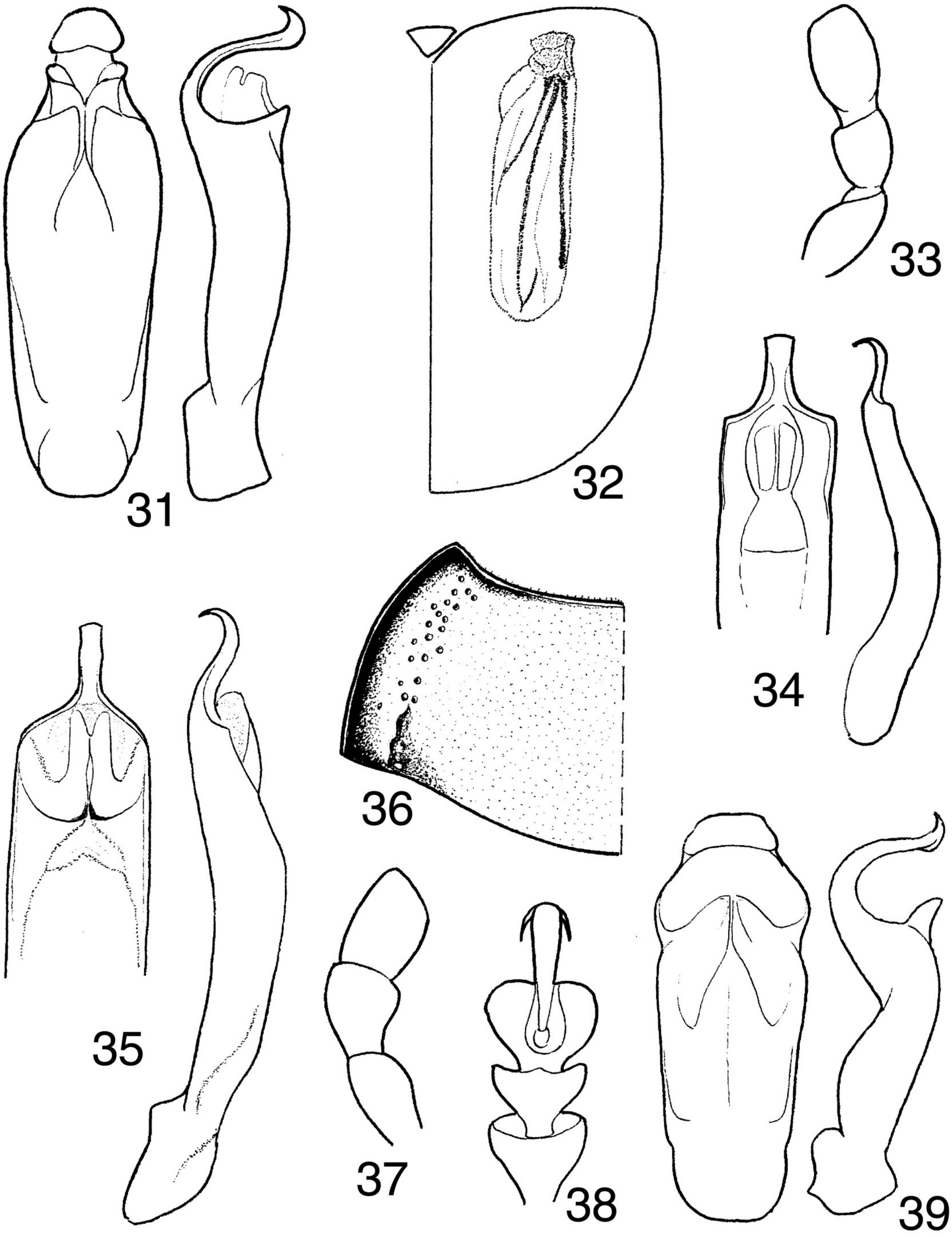


***Ovosoma* figures 11–20:** 11 – *Chrysolina vernalis pyrenaica* (Pyrenees), aedeagus, 12 – *Ch. vernalis herii* (neotype *Chrysomela herii*, Corfu Isl.), aedeagus, 13–20 – *Ch. vernalis pyrenaica* (syntypes *Chrysomela carbonaria*, "Pyrenaei"): 13–17 – male: 13 – dorsal and lateral view, 14 – aedeagus, 15 – last abdominal sternite, 16 – fore-tarsus, 17 – hind-tarsus, 18 – label in

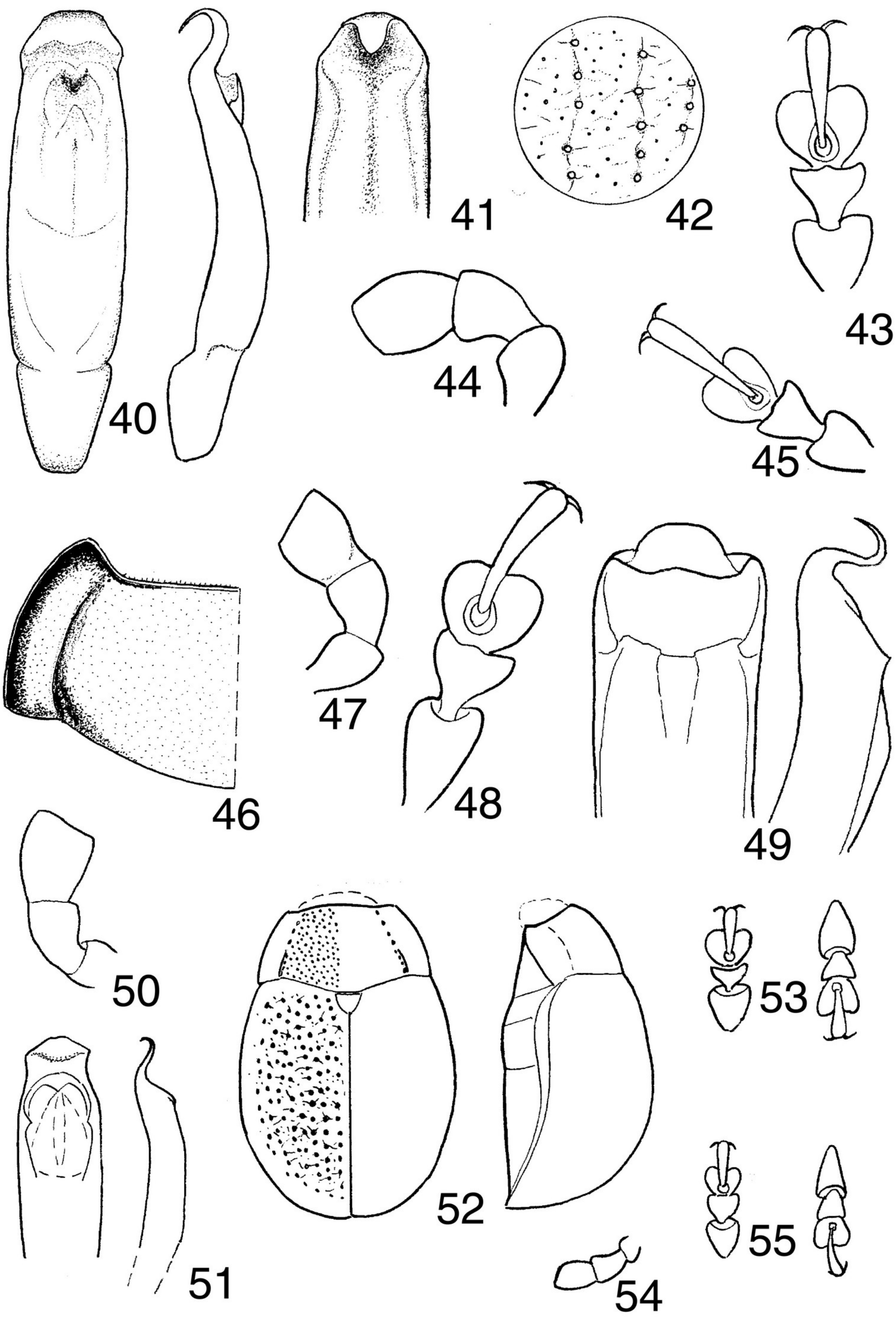
Sufrian's collection (IZH), associated with the type series, 19 – female, fore-tarsus, 20 – female, hind-tarsus. (Orig.)



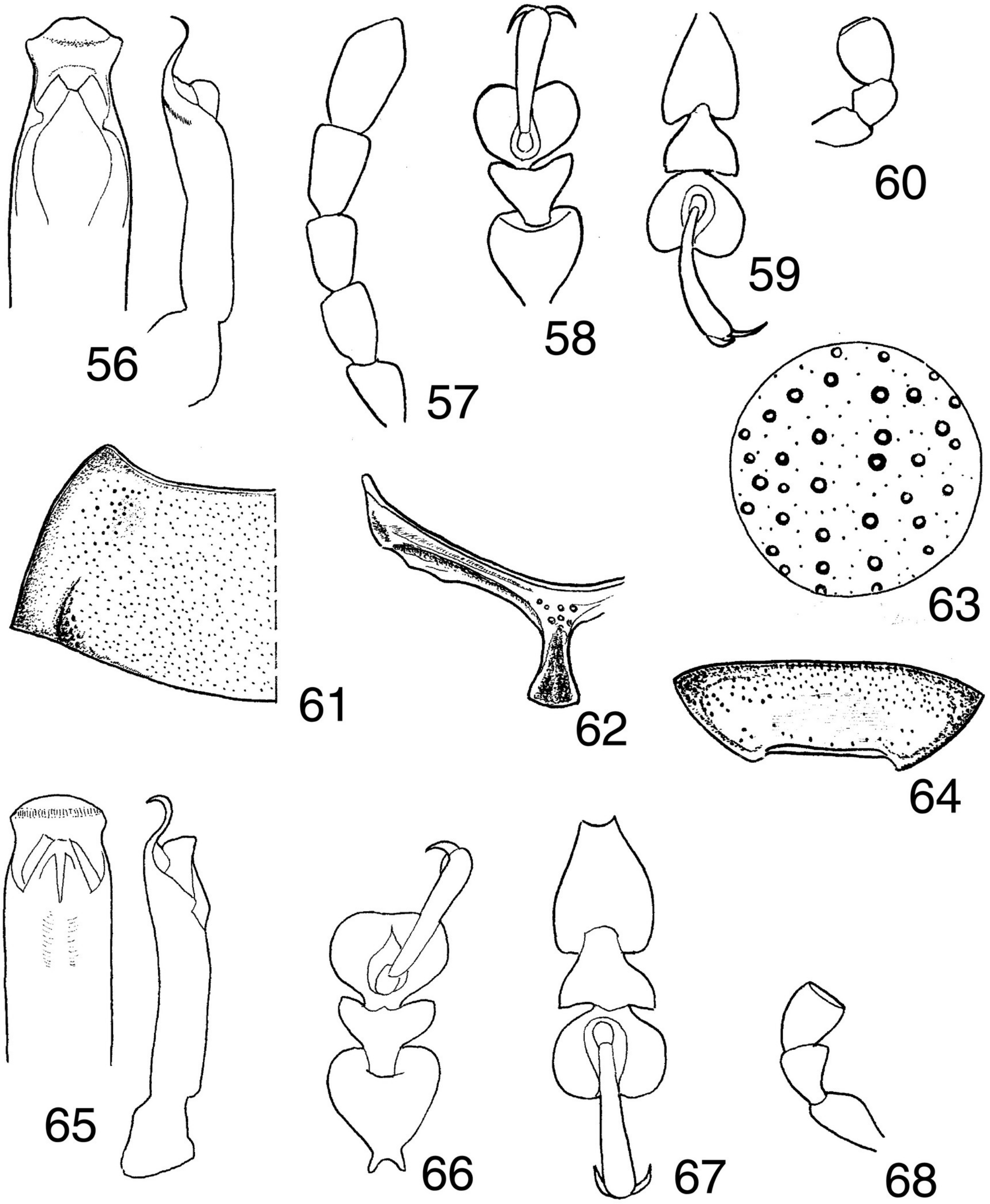
***Ovosoma* figures 21–30**: *Chrysolina vernalis cantabrica* (syntypes *Chrysomela cantabrica*, "Albas"): 21–27 – male: 21 – aedeagus, 22 – fore-tarsus, 23 – hind-tarsus, 24 – antenna, 25 – total dorsal and lateral view, 26 – maxillary palpus, 27 – last abdominal sternite, 28–30 – female: 28 – fore-tarsus, 29 – hind-tarsus, 30 – maxillary palpus. (Orig.)



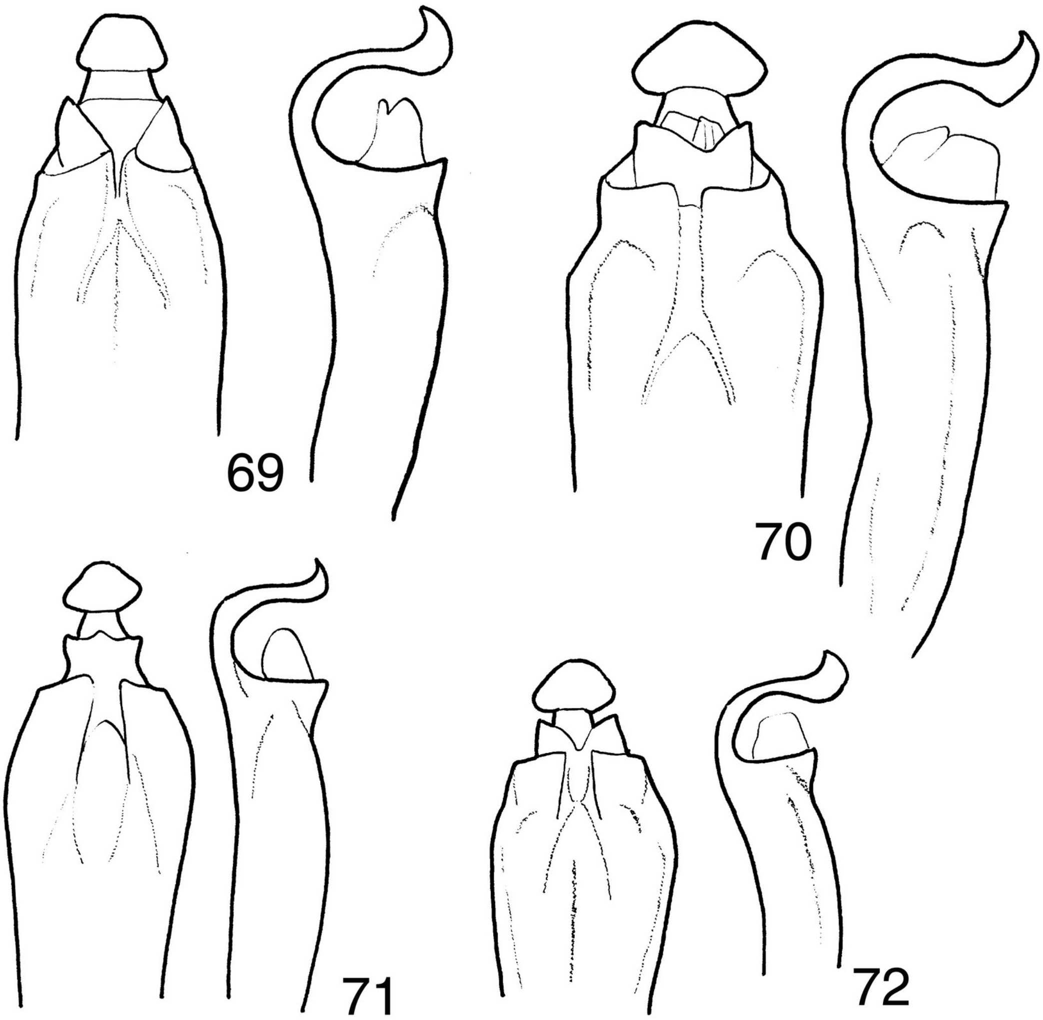
***Ovosoma* figures 31–39**: 31–33 – *Chrysolina orientalis* (neotype *Chrysomela orientalis*, Asia minor, Brusa), male: 31 – aedeagus, 32 – elytron and hind wing, 33 – maxillary palpus; 34–38 – *Ch. turca*: 34 – male (Bulgaria, Rhodopes Mts.), aedeagus, 35–38 – male (Asia minor): 35 – aedeagus, 36 – pronotum, 37 – maxillary palpus, 38 – fore-tarsus; 39 – *Ch. cretica* (Crete Isl.), male, aedeagus. (Orig.)



***Ovosoma* figures 40–55:** 40–45 – *Chrysolina wittmeri* (N-E Turkey): 40–44 – male: 40 – aedeagus, dorsal and lateral view, 41 – aedeagus, ventral view, 42 – elytral disc, 43 – fore-tarsus, 44 – maxillary palpus, 45 – female, fore-tarsus; 46–50 – *Ch. susterai*: 46–48 – male (Ukraine): 46 – pronotum, 47 – maxillary palpus, 48 – fore-tarsus, 49 – male (Russia: S. Urals), aedeagus, dorsal and lateral view, 50 – female (Russia, S. Urals), maxillary palpus; 51–55 – *Ch. atrovirens winneguthi* (Albania): 51–53 – male: 51 – aedeagus, dorsal and lateral view, 52 – total dorsal and lateral view, 53 – fore- and hind-tarsi, 54–55 – female: 54 – maxillary palpus, 55 – fore- and hind-tarsi. (Orig.)



***Ovosoma* figures 56–68:** 56–64 – *Chrysolina atrovirens minckwitzi* (syntype *Chrysomela minckwitzi*, Bosnia and Herzegovina: Sarajevo), male: 56 – aedeagus, dorsal and lateral view, 57 – antennomeres 7–11th, 58 – fore-tarsus, 59 – hind-tarsus, 60 – maxillary palpus, 61 – pronotum, 62 – prosternum, 63 – elytral disc, 64 – last abdominal sternite; 65–68 – *Ch. atrovirens atrovirens* (lectotype *Chrysomela atrovirens*, Romania), male: 65 – aedeagus, dorsal and lateral view, 66 – fore-tarsus, 67 – hind-tarsus, 68 – maxillary palpus. (Orig.)



***Ovosoma* figures 69–72:** Aedeagus, dorsal and lateral view: 69 – *Chrysolina orientalis* (holotype *Ch. orientalis thraeissa*, N Greece), 70–72 – *Ch. sahlbergii*: 70 – male (syntype *Ch. rhodia*, Rhodes Isl.), 71 – male (syntype *Ch. halysa intercalaria*, Azerbaijan), 72 – male (syntype *Ch. halysa halysa*, Lebanon). (Orig.)

Subgenus *Ovostoma* Motschulsky, 1860a

Diagnosis

Dorsum metallic, mostly bluish violet, purplish violet or green; legs dark metallic.

Last maxillary palpomere short, ♂: last palpomere broader than long, securiform, broader than penultimate one, ♀: last palpomere as broad as long, barrel-shaped, slightly broader than penultimate one.

Antenna inserted 2.5 X closer to clypeus than to eye; narrow.

Pronotum broadest basally, or medially, or before mid-length, with lateral sides evenly rounded or almost straight in basal ½, swollen laterally along entire length. Lateral impression developed in basal ½, it is deep, narrow to shallow or obsolete, or absent. Pronotal disc densely finely punctate. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore absent.

Prothoracic hypomeron weakly convex, laterally with impression filled by wrinkles; with distinct outer border. Basal fold deep. Intercoxal prosternal process medially impressed along entire length and usually with short medial keel apically, with elevated lateral borders along entire length.

Metasternum entirely marginated anteriorly.

Elytron without humeral callus. Elytral puncturation dense, punctures of the same size, entirely irregular. Elytral epipleura inclined outside, visible along entire length in lateral view, ciliate apically.

Hind wings very reduced, only 2 X longer than metathorax.

Tarsi: ♂: tarsomeres 1–3 with entire sole, moderately broadened in fore-tarsi, slightly broadened in mid- and hind-tarsi; ♀: tarsomeres 1–3 narrow, all tarsomere 1 with narrow glabrous stripe beneath. Claw tarsomere without denticles beneath.

Pygidium with distinct furrow along entire length.

Last abdominal sternite convex, with apical margin broadly truncate in male, rounded in female.

Aedeagus narrow, long, curved, tube-shaped and moderately depressed dorso-ventrally, with apical margin rounded or roundly-truncate, with 2 apical denticles on ventral side, with flagellum narrow, simple, exposed.

Differential diagnosis

The single species of the present subgenus, *Ch.* (*Ovostoma*) *olivieri* (Bedel, 1892), looks like the members of the subgenus *Ch.* (*Crositops*), especially *Ch. roddi*, and *Ch.* (*Colaphosoma*) *sturmi*, and differs from the former in very broad last maxillary palpomere in male and in distinct outer border of prothoracic hypomeron, and from the latter in legs entirely metallic and hind wings reduced.

The subspecies differ from each other as follows.

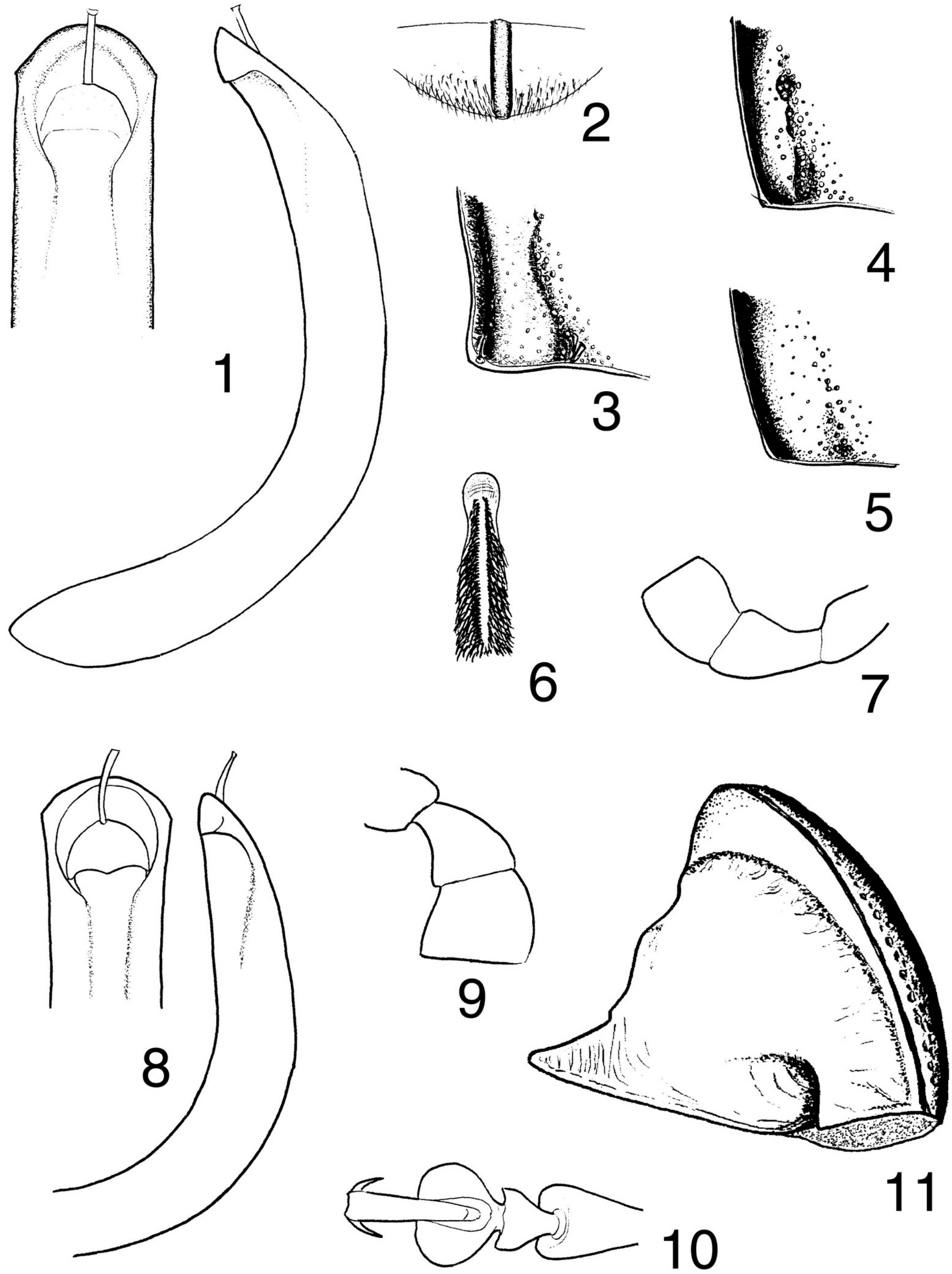
(a) subsp. *olivieri* (Bedel, 1892). The largest, brightly bluish violet subspecies from northern and central part of the specific area: most part of Carpathian and Balkan Mts. Dorsum bright bluish violet, rarely blackish blue. Pronotal lateral impression developed near pronotal base, narrow, deep. This impression usually deviating from pronotal lateral margin toward the pronotal base; therefore pronotal lateral callus broadened toward base. Body length (mm): examined specimens: 8.7–10.3 (♂), 10.3–11.8 (♀); original description: *ehumerosa*: 8–9. Body length is absent in the original descriptions of *coerulea*, *azurea,* and *slovaca*. Figs. 1–3, 6–11.

(b) subsp. *collina* (Csiki, 1953). The small (especially in males) and dark colored subspecies from Romania. Dorsum dark bluish violet or black with bronze, or greenish reflection. Pronotal lateral impression developed near pronotal base, narrow, deep. Pronotal lateral callus narrow, of equal width along entire length. Body length (mm): examined specimens: 6.9–8.4 (♂), 10.3–10.6 (♀); original descriptions: *collina*: 8–10, *deubeli*: 7–8, *subalpina*: 7–7.5. Fig. 4.

(c) subsp. *euminuta* Bechyné, 1950a. The small and dark colored subspecies from Slovakia (High Tatras). Dorsum dark blue (original description) or black with weak purple tint mixed with green (available specimen). Pronotal lateral impression weak near the base, as in subsp. *globipennis*. Pronotal lateral callus narrow, of equal width along entire length. Body length (mm) 6.5–7.5.

(d) subsp. *veneta* (G. Müller, 1948). Medium-sized, brightly bluish violet subspecies from westernmost part of the specific area (N-E Italy). Dorsum bright bluish violet. Pronotal lateral impression absent or obsolete. Pronotal lateral callus narrow, of equal width along entire length. Body length (mm): examined specimens: 9.1–9.2 (♂); original description: 8.5–10.5.

(e) subsp. *globipennis* (Suffrian, 1851). Medium-sized, brightly colored subspecies. Purplish violet and green colors are characteristic of this subspecies which inhabits the northern-eastern part of the specific area: Ukraine, Moldova, and extreme eastern Slovakia (near Ukrainian border), Romania. Dorsum bright green, bluish green or purplish violet. Pronotal lateral impression absent or weak. Pronotal lateral callus narrow, of equal width along entire length. Body length (mm): examined specimens: 7.8–9.1 (♂), 9.2–10.0 (♀); original description: 9.5. Fig. 5.



***Ovostoma* figures 1–11**: 1–3 – *Chrysolina olivieri olivieri* (topotype *Chrysolina coerulea ehumerosa*, Bosnia-Herzegovina: Prenj Planina), male: 1 – aedeagus, dorsal and lateral view, 2 – pygidium, 3 – pronotal base; 4–5 – pronotal base, male: 4 – *Ch. olivieri collina* (Romania), 5 – *Ch. olivieri globipennis* (Moldova); 6–7 – *Ch. olivieri olivieri,* female (Bosnia-Herzegovina): 6 – hind-tarsomere 1, ventral view, 7 – maxillary palpus; 8 – *Chrysolina olivieri olivieri* (holotype *Ch. coerulea azurea*), male, aedeagus, dorsal and lateral view; 9–11 – *Ch. olivieri olivieri* (Slovenia), male: 9 – maxillary palpus, 10 – fore-tarsus, 11 – prothoracic hypomeron. (Orig.)

Subgenus *Palaeosticta* Bechyné, 1952a

Diagnosis

Head, pronotum, scutellum, and elytral suture black with metallic shine (blue, green or brassy); elytra rufous with or without weak metallic reflection or mostly dark brown with basal and lateral margins and narrow intervals between paired rows rufous.

Last maxillary palpomere similar in both sexes. It is oval, elongate, obliquely truncate apically, similar to penultimate one in length and width.

Antenna inserted closer to clypeus than to eye.

Pronotum broadest basally, weakly swollen laterally along entire length. Lateral sides slightly arc-shaped. Lateral impression shallow to obsolete and covered by partly coalescent punctures in basal ⅓, obsolete to absent and covered by numerous separate moderately large punctures in apical ⅔. Pronotal disc densely finely punctate. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore absent.

Prothoracic hypomeron weakly convex, laterally weakly impressed and wrinkled; without outer border. Basal fold strong. Intercoxal prosternal process strongly broadened posteriorly, wrinkled or longitudinally impressed.

Metasternum entirely marginated anteriorly.

Elytron with humeral callus weak to absent. Elytral punctures partly arranged in paired rows among dense confuse punctures, or elytral punctures evenly placed, look like irregular (rows can be usually traced among confuse punctures).

Elytral epipleura inclined outside, visible along entire length in lateral view, densely ciliate near apex.

Hind wings normally developed or slightly reduced (as long as elytron).

Tarsomeres 1–3 with entire sole in both sexes; narrow in female, broad in male. Claw tarsomere without denticles beneath.

Pygidium with distinct furrow along entire length.

Last abdominal sternite evenly convex, with apical margin rounded in female, slightly depressed medially, with apical margin broadly and shallowly emarginated in male.

Aedeagus long, narrow, tube-shaped, strongly flattened dorso-ventrally. Flagellum simple, narrow or moderately broad, slightly exposed.

Differential diagnosis

The members of the Mediterranean subgenus *Palaeosticta* are well characteristic of body broad and rather convex, pronotum with steep lateral slopes, without convex lateral calli, elytron with punctures partly or mostly irregular, and of dorsal coloration: head and pronotum black with metallic shine; elytra rufous or mostly dark brown. They externally look like *Ch.* (*Diachalcoidea*) *aegyptiaca*, especially a color variation of the latter with entirely brown elytra, from which they differ in elytral puncture rows mostly irregular and never very regular, in male tarsi broader, female tarsomere 1 without glabrous stripe beneath.

Key to species and subspecies

The species and subspecies of the subgenus *Palaeosticta* well differ from each other by the male aedeagus structure. External characters, mentioned by Codina Padilla (1961) and Daccordi (1971), namely elytral puncturation (regular / confuse), puncturation of elytral intervals (dense / sparse), body shape (more or less convex), dorsal coloration, shape of 1st abdominal sternite, shape of last maxillary palpomere, puncturation of pronotal disc (dense / sparse), do not permit to distinguish these species from each other exactly because of individual variability.

1(10) Aedeagus with apex simple, rounded or truncate but not anchor-shaped.
2(7) Aedeagus with apex almost straight or weakly turned down in lateral view.
3(4) Aedeagus evenly tapering and rounded apically (Fig. 1). Species from S-W Europe and N Tunisia.

Elytral punctures partly arranged in paired rows. Narrow intervals between the rows of each pair devoid of large punctures, and broad intervals between the pairs are covered with large confused punctures. Elytron rufous with dark punctures or elytron mostly dark brown with basal and lateral margins and narrow intervals between paired rows are rufous. Head, pronotum, scutellum, elytral suture, underside and legs bluish black or brassy black. Hind wings slightly reduced, as long as elytron. Body length 5.3–6.1 mm. Figs. 1, 7, 8.

Ch. diluta (Germar, 1823)

4(3) Aedeagus with drawn out apical lobe which is truncate or roundly truncate at the end. Species from N Africa (Morocco, Algeria, Tunisia, Libya).
5(6) Aedeagus with narrow long apical lobe, separated with constriction (Fig. 2). Species from Morocco: north-west coast, Moyen Atlas and High Atlas mts.

Elytral punctures partly arranged in paired rows. Elytron rufous with dark punctures. Head, pronotum, scutellum, elytral suture, underside and legs bluish black or brassy black. Hind wings normally developed, when expanded it is longer than elytron, or slightly reduced, as long as elytron. Body length 5.0–6.8 mm.

Ch. kocheri (Codina Padilla, 1961)

6(5) Aedeagus with very short apical lobe, separated with constriction (Fig. 3). Species from N Africa: extreme E Morocco, Algeria, Tunisia, W Libya.

Elytral punctures evenly placed, look like irregular; puncture rows usually can be traced among irregular punctures. Elytron rufous with punctures of the same color or dark. Head, pronotum, scutellum, elytral suture, underside and legs bluish black or greenish black. Hind wings slightly reduced, as long as elytron. Body length 5.6–7.8 mm.

Ch. numida (Reiche, 1864)

7(2) Aedeagus with apex strongly turned down in lateral view.

8(9) Apex of aedeagus (a part from the base of apical orifice till the top) longer (in dorsal view) and less curved (in lateral view) than in the next subspecies (Fig. 5). Subspecies from N-E Libya.

Elytral punctures partly arranged in paired rows, with punctures of the same size in intervals between pairs. Elytron rufous with dark punctures. Head, pronotum, scutellum, elytral suture, underside and legs bluish black. Hind wings normally developed, when expanded it is longer than elytron. Body length 7.6–8.6 mm.

Ch. ruffoi ruffoi (Daccordi, 1971)

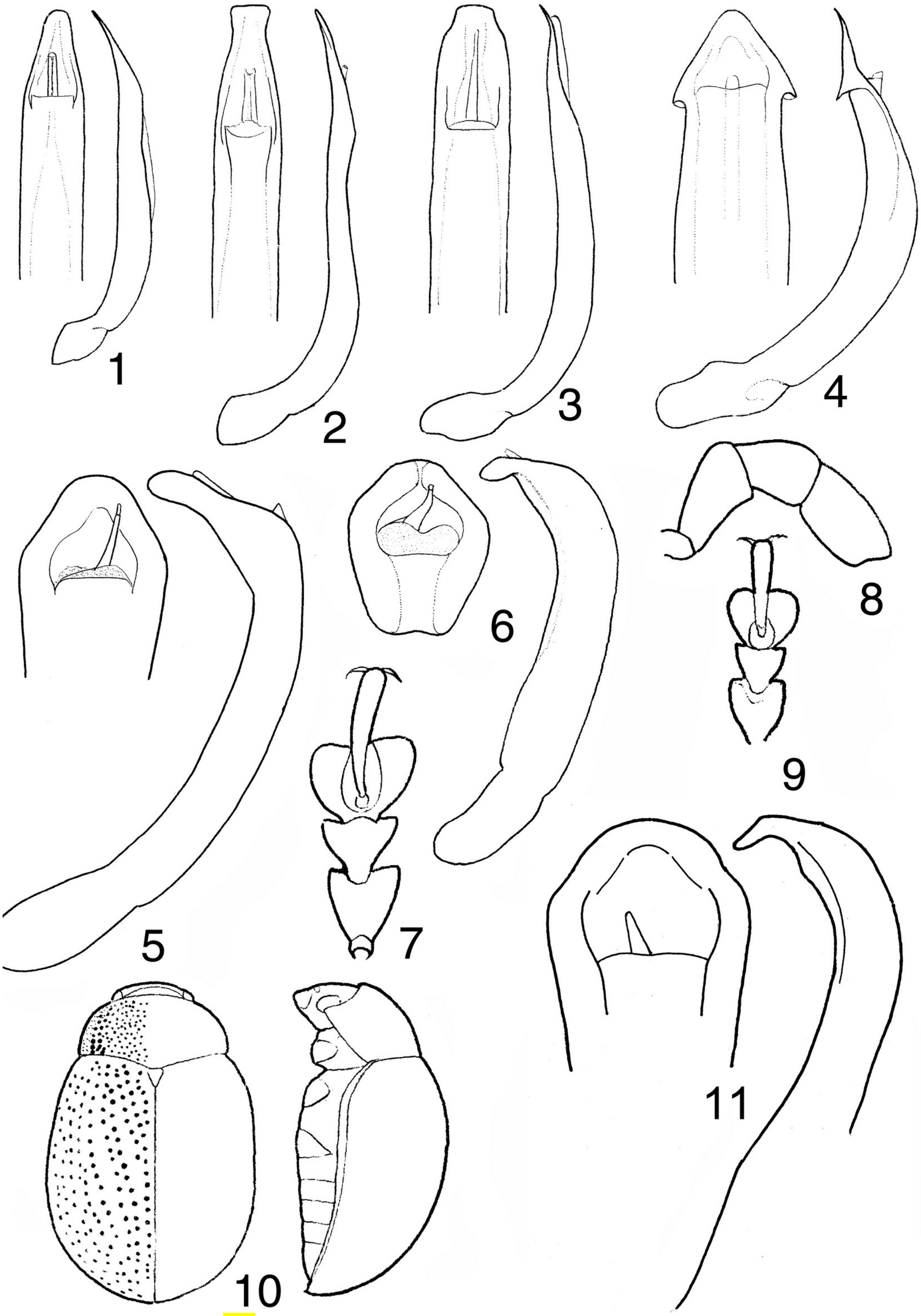
9(8) Apex of aedeagus shorter (in dorsal view) and more curved, nearly hook-shaped (in lateral view) than in the previous subspecies (Fig. 6). Subspecies from Israel and Syria.

Elytral punctures evenly placed, look like irregular, puncture rows can be traced among irregular punctures; or punctures arranged in slightly irregular paired rows. Elytron rufous with dark punctures. Head, pronotum, scutellum, elytral suture, underside and legs bluish black or brassy black. Hind wings normally developed, when expanded it is longer than elytron. Body length 7.3 mm (male). Figs. 6, 9–11.

Ch. ruffoi benjaminica (Daccordi, 1971)

10(1) Aedeagus with apex anchor-shaped (Fig. 4). Species from N-W coast of Morocco, Middle Atlas, Algeria, and Tunisia. Elytral punctures partly arranged in paired rows or evenly placed, look like irregular, with puncture rows usually traced among irregular punctures. Elytron rufous, usually with weak greenish or bronze reflection, with punctures of the same color. Head, pronotum, scutellum, elytral suture, underside and legs bluish black or greenish black. Hind wings slightly reduced, as long as elytron. Body length 5.8–6.3 mm.

Ch. pardoi (Codina Padilla, 1961)



***Palaeosticta* figures 1–11**: 1–6 – aedeagus, dorsal and lateral view: 1 – *Chrysolina diluta* (Portugal), 2 – *Ch. kocheri* (Morocco), 3 – *Ch. numida* (Algeria), 4 – *Ch. pardoi* (Morocco), 5 – *Ch. ruffoi ruffoi* (topotype, Libya, Derna), 6 – *Ch. ruffoi benjaminica* (Israel); 7–8 – *Chrysolina diluta* (Portugal), male: 7 – fore-tarsus, 8 – maxillary palpus; 9–11 – *Ch. ruffoi benjaminica*: 9-10 – male (Israel): 9 – mid-tarsus, 10 – total dorsal and lateral view, 11 – male (holotype, Israel), aedeagus, dorsal and lateral view. (Orig.)

Subgenus *Paracrosita* Daccordi, 1982b

Diagnosis

Above sericeous shining, dark metallic: blackish coppery, blackish olivaceous or blackish blue.

Last maxillary palpomere oval, truncate, as long as penultimate one, hardly broader in male than in female (Fig. 2).

Antenna inserted 1.5–1.7 X closer to clypeus than to eye.

Pronotum with convex lateral calli along entire length. Pronotal sulci wide, deep in posterior ⅓, they shallow anteriorly. Sulci covered by large numerous punctures which partly coalescent basally and separate anteriorly, or punctures wholly coalescent posteriorly forming rough bottom of deep sulci, and partly coalescent anteriorly. Pronotal disc densely finely punctate. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore present.

Prothoracic hypomeron longitudinally convex, laterally impressed and irregularly wrinkled; without outer border. Basal fold distinct. Intercoxal prosternal process covered by large wrinkled punctures and sometimes impressed.

Metasternum entirely marginated anteriorly.

Elytron with distinct humeral callus; with 10 paired rows of coarse or moderately large punctures. Scutellar puncture row short, presents in basal part only; all rows quite regular with only 4th pair of rows sometimes irregular. Rows distinct or hardly visible among punctures in intervals. Intervals flat or slightly wrinkled, covered by fine to moderately large, dense confuse punctures.

Elytral epipleura inclined outside, visible along entire length in lateral view, ciliate near apex.

Hind wings slightly reduced, reaching elytral apex.

Tarsi wholly pubescent beneath in both sexes. All tarsomeres 1–3 strongly dilated in male (Fig. 3), narrow in female. Claw tarsomere without denticles beneath.

Pygidium with deep longitudinal medial furrow in basal ⅔–¾.

Last abdominal sternite depressed, having shallow longitudinal furrow and strongly bisinuate apical margin in male (Fig. 4), evenly convex and rounded apically in female.

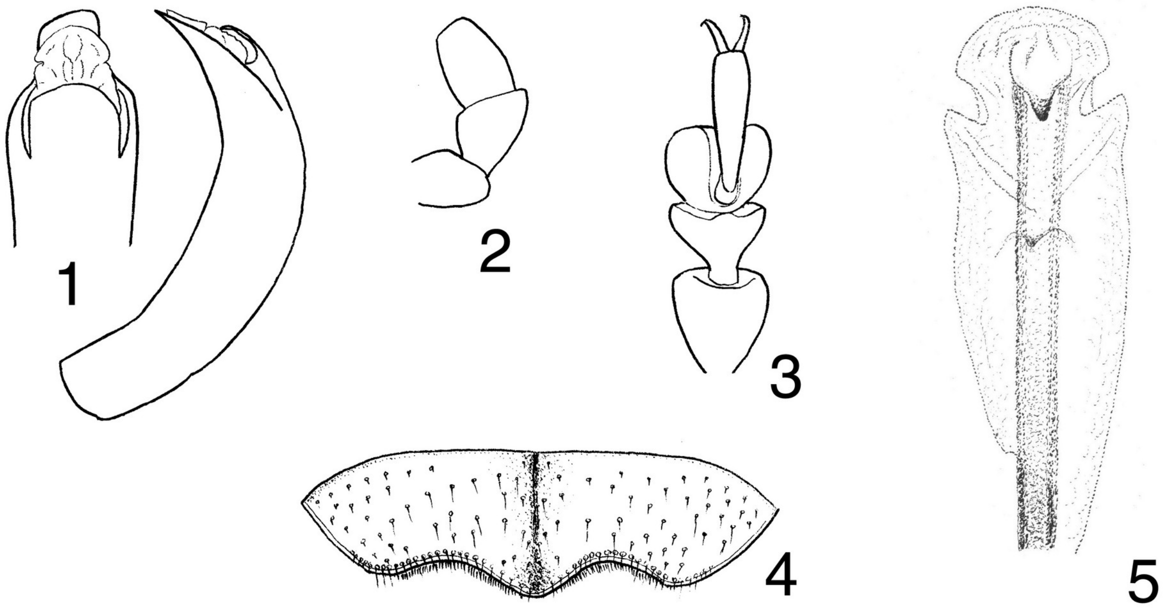
Aedeagus (Fig. 1) tube-shaped, almost rounded in cross-section, strongly curved dorso-ventrally, slightly narrowed laterally near mid-length. Apex bottle-shaped in dorsal or lateral view and usually slightly asymmetric. Flagellum forming wide membranous lobe consisting of three shares, slightly exposed (Fig. 5).

Differential diagnosis

The single member of the subgenus *Paracrosita, Ch.* (*P.*) *armeniaca* (Faldermann, 1837)*,* almost completely corresponds to the diagnosis of the subgenus *Chalcoidea*, and differs from the latter only in secondary sexual characteristics of the male, namely in slightly asymmetric aedeagus and last abdominal sternite with strongly bisinuate apical margin. *Ch. armeniaca* externally looks like the members of the subgenus *Bittotaenia*, especially *Ch. grata* and *Ch. turanica*, and differs in the shape of pronotal lateral impression (never furrow-shaped along entire length) and in tarsomeres 1–3 having entire sole in both sexes.

Key to subspecies of *Ch. armeniaca*

1(2) Dorsum blackish coppery with bronze reflection on head and pronotum, with stronger elytral punctures, elytra slightly wrinkled. Body length 9.4–10.1 mm. Figs. 3–5. N Caucasus, Georgia, Azerbaijan.
Ch. armeniaca armeniaca (Faldermann, 1837)
2(1) Dorsum blackish greenish olivaceous or blackish blue, with finer elytral punctures, elytra smooth, not wrinkled. Body length 10.1–10.7 mm. Figs. 1, 2. Azerbaijan, Turkmenistan, Kyrgyzstan, Afghanistan, N-W Iran
Ch. armeniaca iranica L. Medvedev, 1975, nec Jakob



***Paracrosita* figures 1–5**: 1–2 –*Chrysolina armeniaca iranica* (Turkmenistan), male: 1 – aedeagus, dorsal and lateral view, 2 – maxillary palpus; 3–5 – *Ch. armeniaca armeniaca* (Caucasus), male: 3 – fore-tarsus, 4 – last abdominal sternite, 5 – flagellum of aedeagus. (Orig.)

Subgenus *Paramenthastriella* Daccordi, 1980b

Diagnosis

Above shining (male) or moderately shining (female), metallic, differently colored: 1) male: head violetish purple with bluish green labrum and 2 large green spots on vertex, pronotum green with large violetish purple spots on lateral impressions, narrow violetish purple stripes at basal and apical margins and mid-length, scutellum purple margined with green, elytra coppery, narrowly margined all around with green; underside violetish purple with whole prosternum, meso-, metasternum, abdominal sternites, legs and elytral epipleura partly green; 2) female: head of the same color, as in male, pronotum green with only narrow violetish purple stripes at basal and apical margins, scutellum purple margined with green, elytra dark coppery, very narrowly margined all around with green; underside violetish purple with prosternum at the most surface and meso-, metasternum, abdominal sternites, legs and elytral epipleura partly green.

Last maxillary palpomere oval, truncate, as long as penultimate one, hardly broader in male than in female (Fig. 4).

Antenna inserted closer to clypeus than to eye.

Pronotum (Figs. 2, 3) with weakly convex lateral calli along entire length. Pronotal lateral impressions absent and replaced with broad stripe of large, numerous, not coalescent punctures. Pronotal disc densely covered with unevenly placed moderately large and fine punctures. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore present.

Prothoracic hypomeron slightly convex, laterally impressed and transversely wrinkled; with strong outer border. Basal fold distinct. Intercoxal prosternal process flat and slightly impressed only at apex.

Metasternum immarginated between mid-coxae (Fig. 6).

Elytron with distinct humeral callus; with entirely irregular moderately large punctures. Punctures are "stellate" because of fine short wrinkles extending in all directions from each puncture. Intervals flattish, covered with dense microscopical punctules.

Elytral epipleura horizontal in apical ½, therefore they are invisible there in lateral view, ciliate near apex.

Hind wings normally developed.

Tarsomeres 1–3 wholly pubescent beneath and similar in both sexes (fig. 5). Claw tarsomere without denticles beneath.

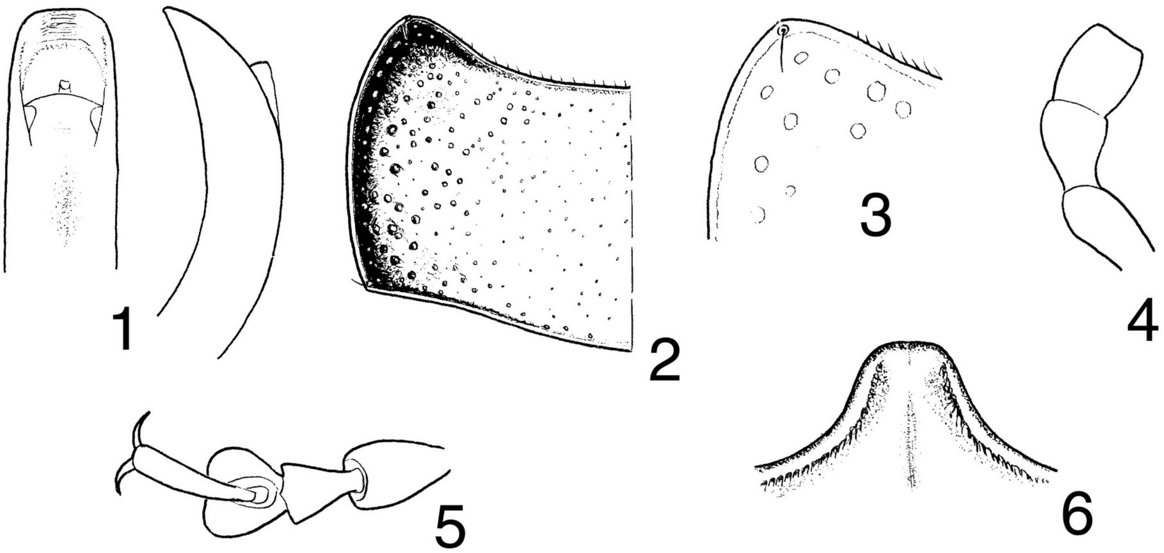
Pygidium with wide deep longitudinal medial furrow in basal ½.

Last abdominal sternite moderately convex in both sexes, with apical margin truncate and slightly bisinuate in male, and straight in female.

Aedeagus (Fig. 1) simple, tube-shaped, slightly depressed and moderately curved dorso-ventrally, almost parallel-sided, slightly narrowed laterally toward the apex. Apical margin truncated and slightly rounded. Flagellum simple, narrow, slightly exposed.

Differential diagnosis

The single species of the E African subgenus *Paramenthastriella*, namely *Ch. beatricis* Daccordi, 1980b, externally looks like the members of the Palaearctic subgenus *Synerga* and especially *Ch. herbacea* in the following main diagnostical characters: elytral epipleura horizontal in apical ½, invisible there in lateral view, pronotum without lateral impressions, dorsum metallic, elytra irregularly punctate, maxillary palpi and tarsi narrow. Aedeagus of *Ch.* (*Paramenthastriella*) *beatricis* is also similar to that of *Ch.* (*Synerga*) members, especially *Ch. suffriani*. The main difference between these two subgenera is the metasternum immarginated anteriorly in the former.



***Paramenthastriella* figures 1–6:** *Chrysolina beatricis*: 1–5 – male, paratype (E Africa): 1 – aedeagus, dorsal and lateral view, 2 – pronotum, 3 – left anterior angle of pronotum, 4 – maxillary palpus, 5 – fore-tarsus; 6 – female, paratype (Tanzania), anterior process of metasternum. (Orig.)

Subgenus *Pezocrosita* Jacobson, 1901a

Diagnosis

Above moderately or sericeous shining, or dull. Coloration varies in different groups of species.

Last maxillary palpomere cylindrical, weakly broadened or narrowed toward apex, or oval, truncate, as wide as penultimate palpomere or slightly broader than latter or slightly narrower than latter; it is as long as penultimate palpomere or 1.1–1.5 times longer than the latter; not differing or slightly differing in both sexes.

Antenna inserted at middle between clypeus and eye or 1.1–2.8 X closer to the former.

Pronotum with weakly convex to rather convex lateral calli along entire length. Shape of pronotal lateral impressions varies in different groups of species.

Prothoracic hypomeron more or less convex, with wrinkles or without them, with impression or without them along outside. Prothoracic basal fold presents or absents in different species groups.

Elytra without humeral calli or with only very weak to obsolete calli. Elytral puncture rows are equidistant or paired, indistinct in some species. Scutellar puncture row abbreviated or absent. Intervals between puncture rows flat or feebly elevated, slightly wrinkled in some species, covered with fine or coarse confuse punctures.

Elytral epipleura inclined outside and visible along entire length in lateral view. They ciliate mostly near apex, or in apical ⅔ in some species within one of the species groups.

Hind wings mostly absent, or vestigial, or, rarely, narrow and almost reaching the apex of abdomen, with reduced venation.

Tarsomeres 1–3: male: wholly pubescent beneath, strongly or slightly dilated in fore- and mid-tarsi; female: 1) wholly pubescent beneath, or 2) with all tarsomeres 1 having broad glabrous stripe, tarsomeres 2 and 3 with narrow glabrous stripe along entire length, or 3) with tarsomere 1 of all tarsi or only mid- and hind-ones with glabrous stripe along entire length or in basal ½-⅔ only. Claw tarsomere without denticles beneath.

Relief of pygidium (presence or absence of longitudinal medial impression) varies in different groups of species.

Shape of last abdominal sternite varies in different groups of species.

Aedeagus more or less flattened dorso-ventrally. Shape of the apex varies in different groups of species. Flagellum mostly whip-shaped, thin, more or less exposed, or with membranous apical "wings" in one of the species groups.

Composition of the subgenus

This subgenus is very heterogeneous. It is probably paraphyletic group. Several authors attempted to exclude a number of species from this subgenus (Bieńkowski, 2001, 2007a; Bourdonné, 2005), or separate a new subgenus (Mikhailov, 2009) close to *Pezocrosita*, or revise some groups of species within *Pezocrosita* (Lopatin, 1992a, 1998; Mikhailov, 2002b).

I propose to divide *Pezocrosita* into groups of species, but not in the subgenera, because the composition of these groups is not completely studied.

The separation of the subgenera *Pezocrosita* and *Allohypericia* is of some difficulty because of heterogeneity of the former, although the wholly developed hind wings and subgeneric-specific shape of aedeagus of *Allohypericia* (see Review of the subgenus *Allohypericia*) never present in *Pezocrosita*.

The area of the subgenus *Pezocrosita* includes the mountain ranges of Central Asia, mostly Altai, Sayans, Tien Shan, Kunlun, and Tibet, only one species inhabits N Urals.

Key to species groups

This key includes, besides *Ch.* (*Pezocrosita*) species group, the members of morphologically close subgenus *Ch.* (*Allohypericia*) with reduced hind wings together with the subgenus *Ch.* (*Jeanclaudia*), closely related to *Ch.* (*Pezocrosita*).

1(8) Pygidium with distinct longitudinal groove in apical ½.
2(3) Pronotum with narrow lateral furrow along entire length or in basal ¼-½, and with anterior setiferous pore. Aedeagus without subapical denticles on lower side.
Subgenus *Jeanclaudia*
3(2) Pronotum without narrow lateral furrow.
4(7) Elytron with rows of dense fine punctures.
5(6) Pronotal lateral impression absent; anterior setiferous pore absent. Male tarsomeres 1–3 slightly or moderately dilated. Aedeagus without subapical denticles on lower side.
brevilata species group
6(5) Pronotal lateral impression broad and shallow along entire length; anterior setiferous pore present. Male tarsomeres 1–3 greatly dilated. Aedeagus with subapical denticles on lower side.
cyanopurpurea species group (in part)
7(4) Elytron with rows of sparse large punctures.
Subgenus *Allohypericia* (*Ch. perforata*)
8(1) Pygidium without distinct longitudinal groove in apical ½.
9(18) Elytron with distinct puncture rows.
10(11) Tarsomere 1 with long narrow glabrous basal "heel". Elytron with equidistant rows of dense punctures.

altimontana species group

11(10) Tarsomere 1 with short glabrous basal "heel".

12(13) Pronotum with deep narrow lateral furrow along entire length.

sahlbergiana species group

13(12) Pronotum without deep narrow lateral furrow along entire length.

14(15) Elytron with rows of dense punctures.

obovata species group

15(14) Elytron with rows of very sparse punctures.

16(17) Pronotal lateral impression weak along entire length.

roborowskii species group

17(16) Pronotal lateral impression deepened forming short shallow furrow near base.

Subgenus *Allohypericia* (*Ch. mauroi*)

18(9) Elytron without distinct puncture rows.

19(20) Pronotum with deep narrow lateral furrow in basal ⅓; anterior setiferous pore absent. Male tarsomeres 1–3 weakly or moderately dilated.

convexicollis species group

20(19) Pronotum without deep narrow lateral furrow in basal ⅓; anterior setiferous pore present. Male tarsomeres 1–3 greatly dilated.

cyanopurpurea species group (part)

***Pezocrosita* (*altimontana*) species group**

Diagnosis

Mostly small (3.5–5.5 mm) beetles, only one species moderately large (6.1–7.0 mm).

Above dark metallic, unicolorous or coloration of head and pronotum differs from coloration of elytra.

Antenna inserted closer to clypeus than to eye.

Pronotum with lateral impression in basal ¼–⅓ only or without lateral impressions at all. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore absent.

Prothoracic hypomeron without border along outside. Basal fold absent in the most species (present but obsolete in *Ch. hohxilensis* only).

Elytron without humeral callus, with 10 regular equidistant rows (including short scutellar row) of very dense punctures, with intervals weakly to moderately elevated.

Elytral epipleura ciliate in apical part.

Hind wings vestigial.

Tarsomere 1 with long narrow glabrous basal "heel"; tarsomeres 1–3 with entire sole in both sexes. In male tarsomeres 1–3 more or less dilated.

Pygidium without longitudinal medial groove or with weak groove basally only.

Male last abdominal sternite convex.

Aedeagus flattened dorso-ventrally, curved, with parallel lateral sides, with apex triangular or rounded. Flagellum thin, exposed.

Distribution: China (Qinghai, N-W Sichuan).

Key to species

1(4) Legs black. Tibiae simple. Distances between punctures in elytral rows usually as wide as 4–5 X puncture diameter.

2(3) Apical orifice of aedeagus short, and devoid of long membrane. Pronotal lateral sides slightly arc-shaped; lateral impressions absent. Dorsum dark bronze, with or without golden reflection. Length 4.7–5.4 mm. Figs. 1, 2. China (Qinghai, N-W Sichuan).
Ch. altimontana (Rybakow, 1889)

3(2) Apical orifice of aedeagus long and covered with membrane in basal ⅔. Pronotal lateral sides strongly arc-shaped; lateral impressions short and shallow. Dorsum dark bronze, with or without golden reflection. Length 4.6–5.3 mm. China: Qinghai. Figs. 3, 4.
Ch. sp. 47

4(1) Legs rufous. Tibiae more or less triangularly protruded outward at the apex. Distances between punctures in elytral rows usually not more than twice the diameter of puncture.

5(6) Body larger, 6.1–7.0 mm. Elytral intervals moderately or slightly convex or almost flat. Pronotum with lateral furrows filled with large coalescent punctures in basal ⅓. Dorsum green, sometimes with pronotum bluish green. Aedeagus rounded apically. Figs. 8–10. China (Qinghai).
Ch. kozlovi Lopatin, 1988

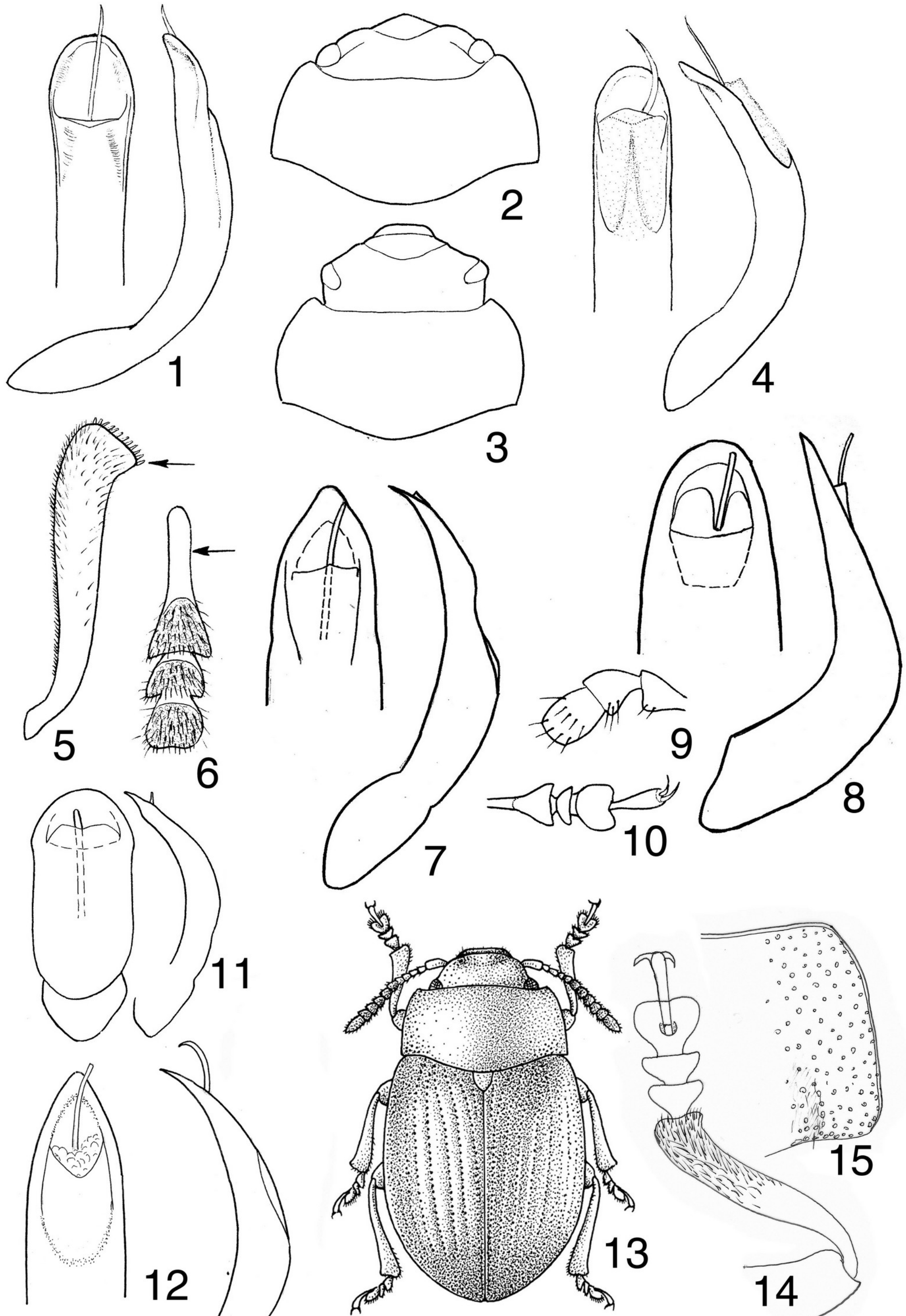
6(5) Body smaller, 3.5–5.5 mm. Elytral intervals slightly convex.

7(10) Pronotum with lateral furrows near base.

8(9) Dorsum bicolorous: head and pronotum (or only head) violet or blue, elytra dark green. Aedeagus triangular apically. Pronotum with lateral furrow more or less distinct, filled with large coalescent punctures in basal ¼. Length 4.7–5.5 mm. Figs. 5–7. China (Qinghai).
Ch. amplicollis (Jacobson, 1895)

9(8) Dorsum unicolorous: black with golden reflection or dark green with bronze reflection. Aedeagus rounded apically. Pronotum with weak lateral furrow in basal ⅓. Length 4.2–4.5 mm. Fig. 11. China (Qinghai).
Ch. dalailamai Lopatin, 1998

10(7) Pronotum without lateral impressions near base, with only slight depression. Dorsum black with very weak violet tint. Aedeagus triangular apically. Length 3.5–4.7 mm. Figs. 12–15. China (Qinghai).
Ch. hohxilensis Daccordi et Ge, 2011



***Pezocrosita* (*altimontana*) figures 1–15**: 1–2 – *Chrysolina altimontana*, male, paralectotype (China: Qinghai): 1 – aedeagus, dorsal and lateral view, 2 – head and pronotum; 3–4 – *Ch.* sp. 47, male (China: Qinghai): 3 – head and pronotum, 4 – aedeagus, dorsal and lateral view; 5–7 – *Ch. amplicollis* (China: Qinghai): 5–6 – female: 5 – fore-tibia, outer apical corner marked with arrow, 6 – hind-tarsus from below, basal "heel" marked with arrow, 7 – male, paralectotype, aedeagus, dorsal and lateral view; 8–10 – *Ch. kozlovi*, male, holotype (China: Qinghai): 8 – aedeagus, dorsal and lateral view, 9 – maxillary palpus, 10 – fore-tarsus from below; 11 – *Ch. dalailamai*, male, paratype (China: Qinghai), aedeagus, dorsal and lateral view; 12–15 – *Ch. hohxilensis* (China: Qinghai): 12, 14, 15 – male, paratype: 12 – aedeagus, dorsal and lateral view, 14 – fore-leg, 15 – pronotum, 13 – total dorsal view. (Orig. figures by M. Daccordi: 14, 15; after: Ge, et al., 2011: 13; others – orig. figs. by the author)

***Pezocrosita* (*brevilata*) species group**

Diagnosis

Beetles small (4.6–6.5 mm) or moderately large (5.5–8.2 mm) in different species.

Above dark metallic, unicolorous or coloration of head and pronotum differs from coloration of elytra.

Antenna inserted closer to clypeus than to eye or at middle between clypeus and eye.

Pronotum evenly convex from side to side and bearing wide lateral band of large punctures which separates lateral callus. Lateral impression mostly absents, rarely presents: very obsolete, hardly visible near base. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore absent.

Prothoracic hypomeron weakly convex, impressed along outside, with more or less distinct wrinkles there, without outer border. Basal fold distinct or weak in different species.

Elytron without humeral callus, with 10 regular paired rows (including short scutellar row) of coarse or moderately large punctures. 2nd–4th rows slightly irregular. Intervals flat, densely punctate.

Elytral epipleura ciliate near apex or in apical ⅔.

Hind wings mostly vestigial; in *Ch. koenigi* wings almost reaches apex of abdomen, narrow, with reduced venation.

Tarsomere 1 with short glabrous basal "heel". In female, all tarsomeres 1 with narrow glabrous stripe in basal ½ or along entire length beneath in all species from Tien Shan, entirely pubescent beneath in one species from Sichuan. In male tarsomeres 1–3 with entire sole, slightly or moderately dilated.

Pygidium with distinct longitudinal medial groove along entire length.

Last abdominal sternite convex in both sexes.

Aedeagus oval in cross-section or flattened dorso-ventrally, evenly curved, with apex triangular, or rounded, or trapezoidal. Flagellum thin, exposed.

Distribution: Tien Shan and China (Xinjiang, Sichuan).

Key to species

1(18) Elytral epipleura ciliate in apical part only.

2(7) Body smaller (male 5.0–5.4 mm long).

3(6) Aedeagus with apical orifice short (Figs. 4, 8). Female with tarsomere 1 bearing narrow glabrous stripe in basal ½. Species from Central Asia.

4(5) Aedeagus very flat, thin dorso-ventrally, with strongly bent outwards medial lobe covering apical orifice, with apical margin rounded. Dorsum moderately shining, black. Tien Shan:

Kyrgyz Alatau, Kungei Alatau, Trans-Ili Alatau. Length: 5.0–6.3 mm. Fig. 4.

Ch. verestschaginae Lopatin, 1992a

5(4) Aedeagus oval in cross-section, more thick dorso-ventrally, with medial lobe pressed to apical orifice or slightly bent outwards, with apical margin rounded-triangular. Dorsum moderately shining, dark bronze. Kazakhstan: Trans-Ili Alatau. Length: 5.3– 5.8 mm. Species close to *Ch. brevilata* externally and in aedeagus structure and differs in smaller body, and medial lobe of aedeagus pressed to apical orifice. Fig. 8.

Ch. sp. 51

6(3)Aedeagus with apical orifice 3 X longer than wide (Fig. 15). Female with tarsomere 1 entirely pubescent beneath. Species from Sichuan. Length: 5.0 mm (male), 5.5 mm (female).

Ch. sp. 52

7(2) Body larger (male 5.5–6.8 mm long). Aedeagus oval in cross-section, more thick dorso-ventrally.

8(15) Aedeagus simply curved dorso-ventrally.

9(14) Dorsum shining.

10(13) Dorsum black with metallic tint. Apical margin of aedeagus rounded or rounded triangular.

11(12) Pronotum broadest basally. Head and pronotum covered with very fine punctures. Elytral rows distinct on very finely punctate background. Apical orifice of aedeagus with medial lobe less bent outwards. Dorsum shining, black with olivaceous tint. N Kyrgyzstan and S-E Kazakhstan: Kyrgyz Alatau, Trans-Ili Alatau, Suusamyr Too, Kendyktau, S-W Fergana Ridge. Length: 5.5–8.0 mm. Fig. 1.

Ch. brevilata (Heyden, 1886)

12(11) Pronotum broadest near mid-length. Head and pronotum covered with larger punctures. Elytral rows less distinct on more largely punctate background. Apical orifice of aedeagus with medial lobe more bent outwards. Dorsum shining, black with bronze tint. S-W Kyrgyzstan and N-W Tajikistan: Alai Range, Turkestan ridge, Hissar Range. Length: 6.0–8.2 mm. Fig. 2.

Ch. koenigi (Jacobson, 1895)

13(10) Dorsum bronze. Apical margin of aedeagus almost truncate (forming very obtuse angle). Pronotum broadest at mid-length or behind mid-length, but not basally. Head and pronotal disc covered with dense moderate punctures. Elytral rows distinct on the finely punctate background. Apical orifice of aedeagus with medial lobe less bent outwards. China: Xinjiang. Length 7.2 mm (male), 8.0 mm (female). Fig. 14.

Ch. sp. 42

14(9) Dorsum dull, dark violet. Aedeagus long, almost straight. E Kazakhstan: Dzhungar Alatau. Length: 6.5–7.3 mm. Fig. 5.

Ch. petrenkoi Lopatin, 1992a

15(8) Aedeagus twice curved apically in lateral view.

16(17) Aedeagus slightly broadened at sides of apical orifice, with apical margin triangular. Dorsum moderately shining, black with bronze tint. Length: 6.7–7.4 mm (male). Female is unknown. N and E Kyrgyzstan: Terskey Ala-Too, Kyrgyz Alatau (Alamedin Gorge). Figs. 9, 10.

Ch. terskeica Romantsov, 2005

17(16) Aedeagus greatly broadened at sides of apical orifice, with apical margin trapezoidal. Dorsum moderately shining, dark bronze or black with golden tint. Length: 6.5–7.1 mm. E Kazakhstan: Dzhungar Alatau. Figs. 12, 13.

Ch. sarcandica Lopatin, 1990a

18(1) Elytral epipleura ciliate from apex to at least the level of 1st abdominal sternite mid-length.

19(20) Aedeagus tapering at sides of apical part, narrowly rounded apically. Elytral epipleura ciliate from apex to the level of 1st abdominal sternite mid-length. Dorsum dark metallic: bronze, violet, blue, brassy, green, or bicolorous: head and pronotum green, elytra blue. Length 5.5–6.4 mm. S-E Kazakhstan: Ketmen ridge. Fig. 3.

Ch. ketmenica (Lopatin, 1970b)

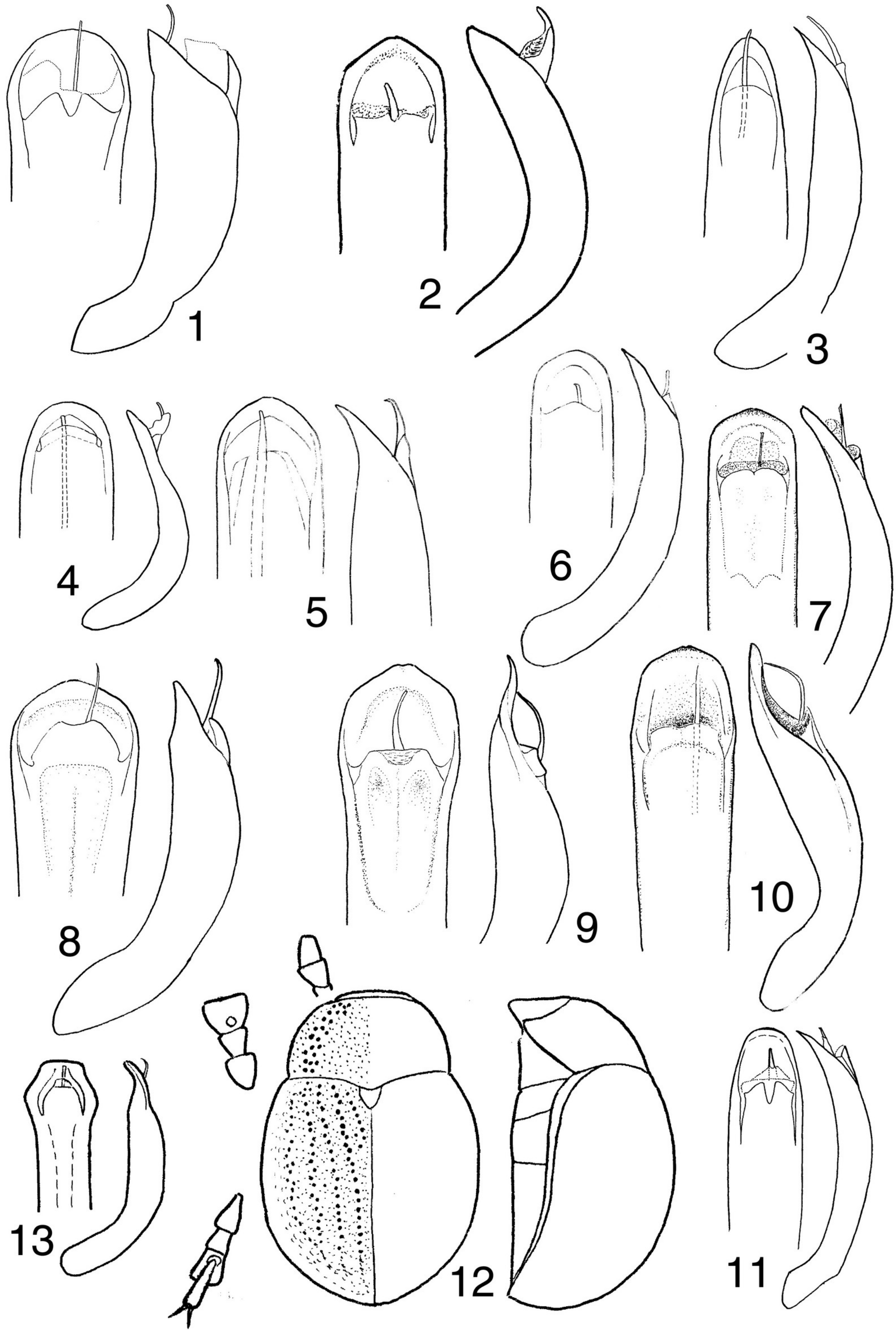
20(19) Aedeagus parallel-sides almost to apex, broadly rounded or truncate apically.

21(22) Lateral sides of aedeagus parallel at apical orifice; medial lobe covering apical orifice is only slightly emarginated at the end. Elytral epipleura ciliate from apex to the level of mid-coxae. Dorsum dark metallic: bronze, coppery, blue, violet, golden green, or black, or bicolorous: head and pronotum blue, elytra violet, or head and pronotum green, elytra blue or violet, or head and elytra green, pronotum coppery. Length 4.6–6.5 mm. S-E Kazakhstan, Kyrgyzstan, China: Xinjiang. Figs. 6, 7.

Ch. juldusana (Lopatin, 1962)

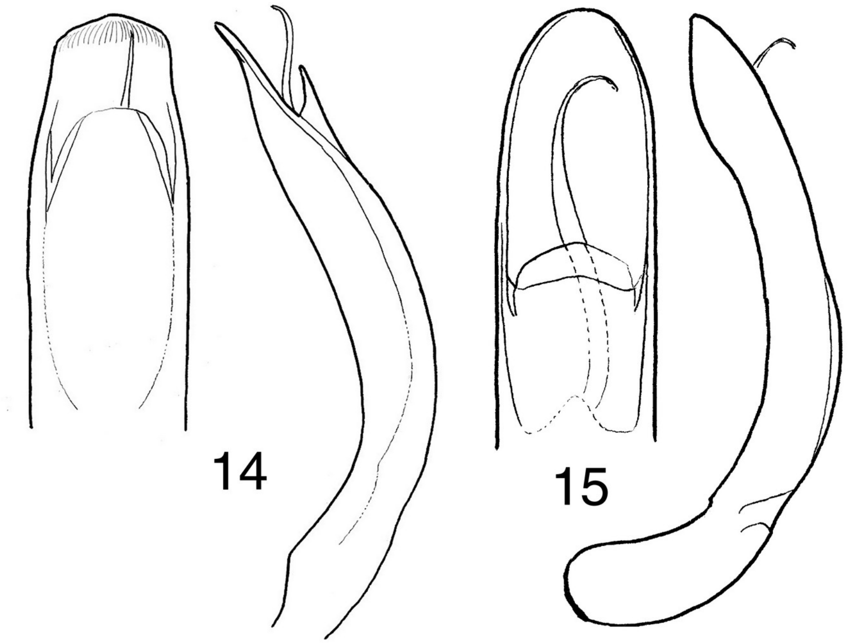
22(21) Lateral sides of aedeagus distinctly convergent at apical orifice; medial lobe covering apical orifice is deeply emarginated at the end. Elytral epipleura ciliate from apex to the level of 1st abdominal sternite mid-length. Dorsum wholly dark violet, or with blue tint on pronotum, or bronze. Length 5.4–6.5 mm. China: Xinjiang. Fig. 11.

Ch. tekessica Lopatin, 2000a



***Pezocrosita* (*brevilata*) figures 1–13**: 1–11 – aedeagus, dorsal and lateral view: 1 – *Chrysolina brevilata* (Kyrgyzstan, Fergana Ridge), 2 – *Ch. koenigi* (holotype *Ch. katarinae*, Tajikistan), 3 – *Ch. ketmenica* (S-E Kazakhstan), 4 – *Ch. verestschaginae* (holotype, Kyrgyzstan), 5– *Ch. petrenkoi* (holotype, S-E Kazakhstan), 6 – *Ch. juldusana* (Kyrgyzstan), 7 – *Ch. juldusana* (syntype *Ch. oschanini*, Turkestan ridge), 8 – *Ch*. sp. 51 (Kazakhstan, Trans-Ili Alatau), 9–10 – *Ch. terskeica*: 9 – male from Kyrgyzstan (Kyrgyz Alatau), 10 – holotype (Kyrgyzstan, Terskey Ala-Too), 11 – *Ch. tekessica* (holotype, China, Xinjiang); 12–13 – *Ch.*

sarcandica (holotype, E Kazakhstan): 12 – total dorsal and lateral view, maxillary palpus, fore- and hind-tarsus, 13 – aedeagus, dorsal and lateral view. (Orig.)



***Pezocrosita* (*brevilata*) figures 14–15,** aedeagus, dorsal and lateral view: 14 – *Chrysolina* sp. 42 (China: Xinjiang), 15 – *Ch*. sp. 52 (China: Sichuan). (Orig.)

Pezocrosita (*convexicollis*) species group

Diagnosis

Beetles moderately large (6.0–9.8 mm).

Above black or dark metallic, unicolorous or coloration of head and pronotum is different from coloration of elytra.

Antenna inserted closer to clypeus than to eye.

Pronotum with convex lateral calli along entire length, separated from disc by very deep narrow furrows in basal ⅓ and by moderately deep impressions with 1–6 deep grooves filled with coarse punctures anteriorly. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore absent.

Prothoracic hypomeron more or less convex, impressed along outside, with distinct wrinkles there, without outer border. Basal fold very deep.

Elytron without humeral callus or with very weak callus, with dense, mostly confuse, slightly wrinkled punctures. Short longitudinal puncture rows are visible here and there.

Elytral epipleura ciliate in apical part.

Hind wings vestigial.

Tarsomere 1 with short glabrous basal "heel". In female all tarsomeres 1 with broad glabrous stripe along almost entire length beneath. In male tarsomeres 1–3 with entire sole, weakly or moderately dilated.

Pygidium with shallow or moderately deep longitudinal medial groove in basal ⅓–½.

Last abdominal sternite slightly impressed in apical part or weakly convex in male, convex in female.

Aedeagus oval in cross-section, moderately curved dorso-ventrally, with apex triangular and slightly S-shaped dorso-ventrally. Flagellum exposed, thin or strongly broadened forming trident before apex.

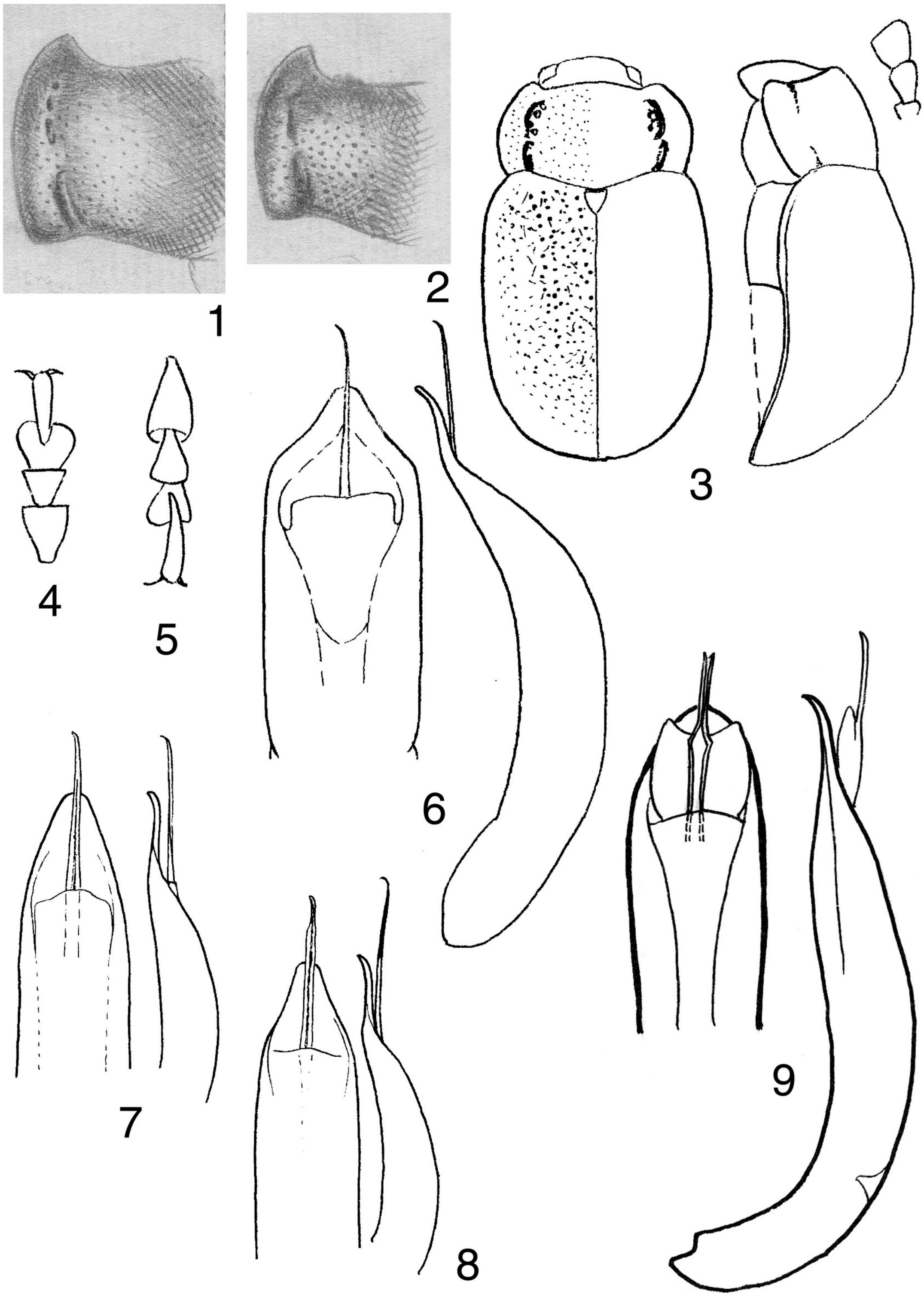
Differential diagnosis

Female of *Ch. convexicollis* (and, sometimes, females of other species of this group) is almost indistinguishable from that of *Ch.* (*Chrysocrosita*) *concinna*; it differs in: body some smaller, up to 9.3 mm long (up to 10.0 mm in *Ch. concinna*), obsolete humeral callus (callus is more distinct in *Ch. concinna*), brown or rufous tarsi (they are metallic dark violet in *Ch. concinna*), more narrow and elongate last and penultimate maxillary palpomeres (they are broad, with last palpomere is slightly broader than long in *Ch. concinna*). The members of subgenus *Ch.* (*Chrysocrosita*) and *Ch.* (*Pesocrosita*) (*convexicollis*) group well differ in male aedeagus structure. However, *Ch. convexicollis* and *Ch. concinna* can be found in the same localities, e.g. in Tuva Republic, and identification of females can be difficult.

Distribution: Tuva, Mongolia.

Key to species [see also "Comments on taxonomy...", remark 221]

1(2) Flagellum of aedeagus strongly broadened forming trident before apex. Dorsum black with greenish, violet, or bronze tint, or dorsum brassy green, green, greenish violet, or violet. Color of pronotum and elytra same or different. Length 6.9–9.3 mm. Figs. 1, 9. Tuva, Mongolia.
Ch. convexicollis (Jacobson, 1901b)
2(1) Flagellum of aedeagus thin.
3(4) Aedeagus slightly broadened toward apex. Apex of aedeagus forming short triangle with drawn tip. Dorsum black with blue, violet, or bronze tint, or dorsum violet, coppery, or green with bronze or violet tint. Coloration of pronotum and elytra different. Length 6.9–9.8 mm. Figs. 2–6. Tuva.
Ch. urjanchaica (Jacobson, 1925)
4(3) Aedeagus with parallel sides. Apex of aedeagus forming elongate triangle.
5(6) Apex of aedeagus gradually narrowing to the tip or only hardly drawn out. Dorsum black, with or without greenish tint on pronotum and elytra or dorsum blue or violet. Coloration of pronotum and elytra same or different. Length 6.0–8.3 mm. Fig. 7. Tuva, border Russia–Mongolia.
Ch. ulugkhemica Mikhailov, 2002b
5(6) Apex of aedeagus distinctly drawn out at the tip. Dorsum bronze, greenish bronze, violet or green. Coloration of pronotum and elytra different. Length 6.6–7.9 mm. Fig. 8. Tuva.
Ch. erzinica Mikhailov, 2002b



***Pezocrosita* (*convexicollis*) figures 1–9**: 1–2 – pronotum: 1 – *Chrysolina convexicollis*, 2 – *Ch. urjanchaica*; 3–6 – *Ch. urjanchaica*, male, syntype (Tuva): 3 – total dorsal and lateral view, maxillary palpus, 4 – fore-tarsus, 5 – hind-tarsus, 6 – aedeagus, dorsal and lateral view; 7–9 – aedeagus, dorsal and lateral view: 7 – *Ch. ulugkhemica* (Tuva), 8 – *Ch. erzinica*, holotype (Tuva), 9 –

Pezocrosita

Ch. convexicollis (Tuva). (Figs. by an unknown author: 1, 2; others – figs. by the author)

***Pezocrosita* (*cyanopurpurea*) species group**

Diagnosis

Beetles moderately large to large (6.6–12.2 mm).

Above dark metallic (green, blue, violet), unicolorous or coloration of head and pronotum differs from coloration of elytra.

Antenna inserted closer to clypeus than to eye.

Pronotum with slightly to moderately convex lateral calli along entire length, separated from disc by broad shallow to moderately deep impression filled with more or less numerous punctures along entire length. Lateral impression of equal depth along entire length or slightly deeper posteriorly than anteriorly. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore present.

Prothoracic hypomeron convex, with wrinkles along outside, but without distinct impression there, without outer border. Basal fold distinct.

Elytron without humeral callus or with very weak callus, with paired, more or less regular puncture rows or with confuse puncturation.

Elytral epipleura ciliate in apical part.

Hind wings vestigial.

Tarsomere 1 with short glabrous basal "heel". In female all tarsomeres 1 with very narrow glabrous stripe in basal ⅔ beneath, tarsomeres 1–3 narrow. In male tarsomeres 1–3 with entire sole, greatly dilated.

Pygidium with shallow longitudinal medial impression in basal ½ or groove along entire length.

Last abdominal sternite convex in both sexes.

Aedeagus oval in cross-section, greatly curved dorso-ventrally, with almost parallel lateral sides or moderately broadened toward apex, with apical margin triangular or roundly-triangular, with 2 subapical denticles latero-ventrally or without such denticles. Flagellum very long, whip-shaped.

Distribution: 2 species in W Tien Shan, 1 species in N-W China.

Key to species

1(2) Pronotum with distinct lateral impression along entire length. Elytral punctures arranged in long paired rows at the greater part of the surface; rows usually distinct, but sometimes mixed with punctures in intervals.

Dorsum dark metallic: green, olivaceous, blue, unicolorous, or head and pronotum dark blue, and elytra dark green. Antennae and tarsi rufous, brown or black. Pygidium with shallow impression in basal ½. Aedeagus with 2 sharp subapical denticles. Length 9.0–12.2 mm. Species from W Tien Shan. Figs. 1–7.

Ch. helenae (Lopatin, 1968a)

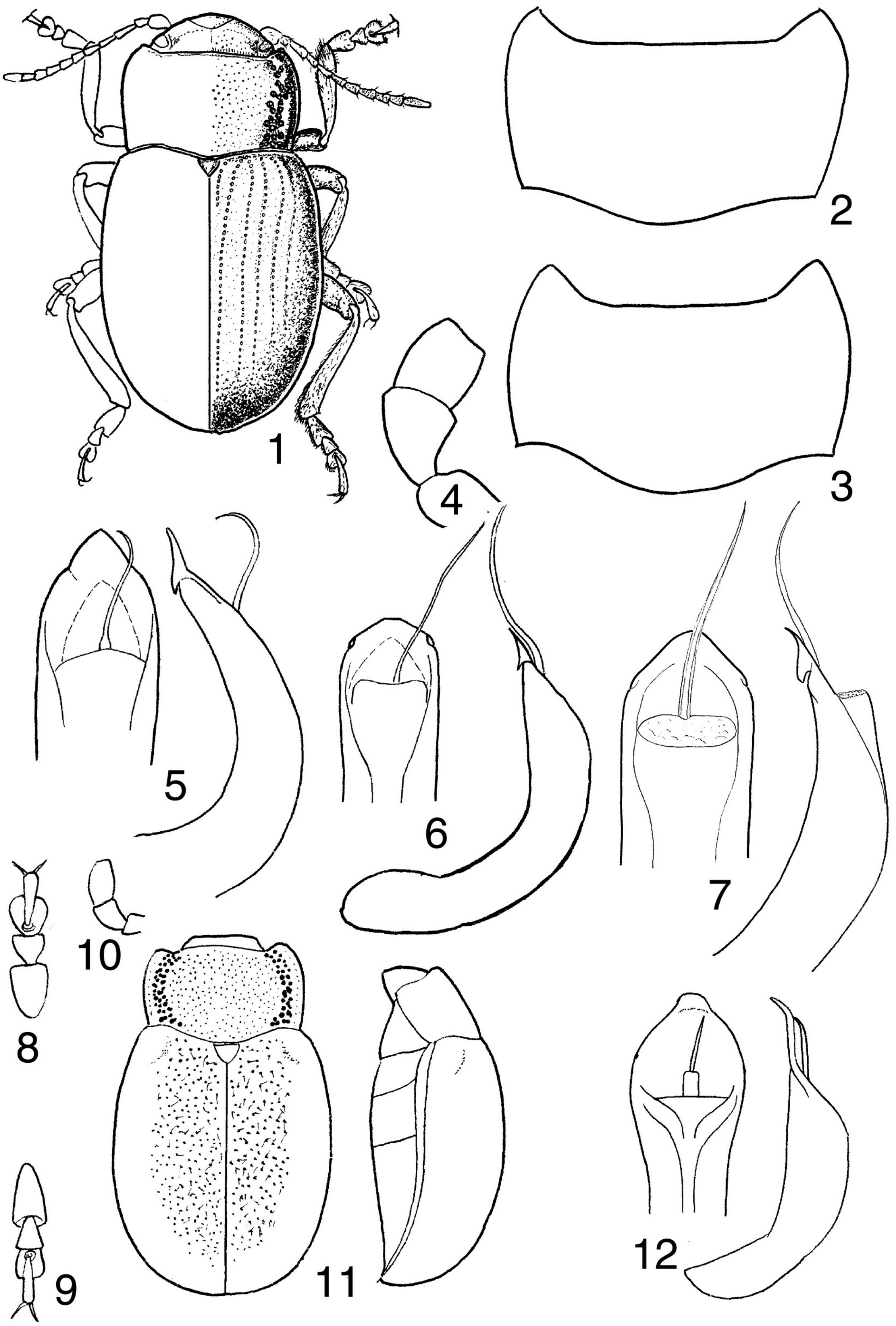
2(1) Pronotum with shallow to obsolete lateral impressions. Elytral puncturation mostly or wholly confuse.

3(4) Dorsum, antennae and tarsi violet or blue. Pygidium with groove along entire length. Aedeagus with 2 small obtuse subapical denticles. Length 6.6–9.4 mm. Species from N-W China. Figs. 13–19.

Ch. cyanopurpurea (Ballion, 1878)

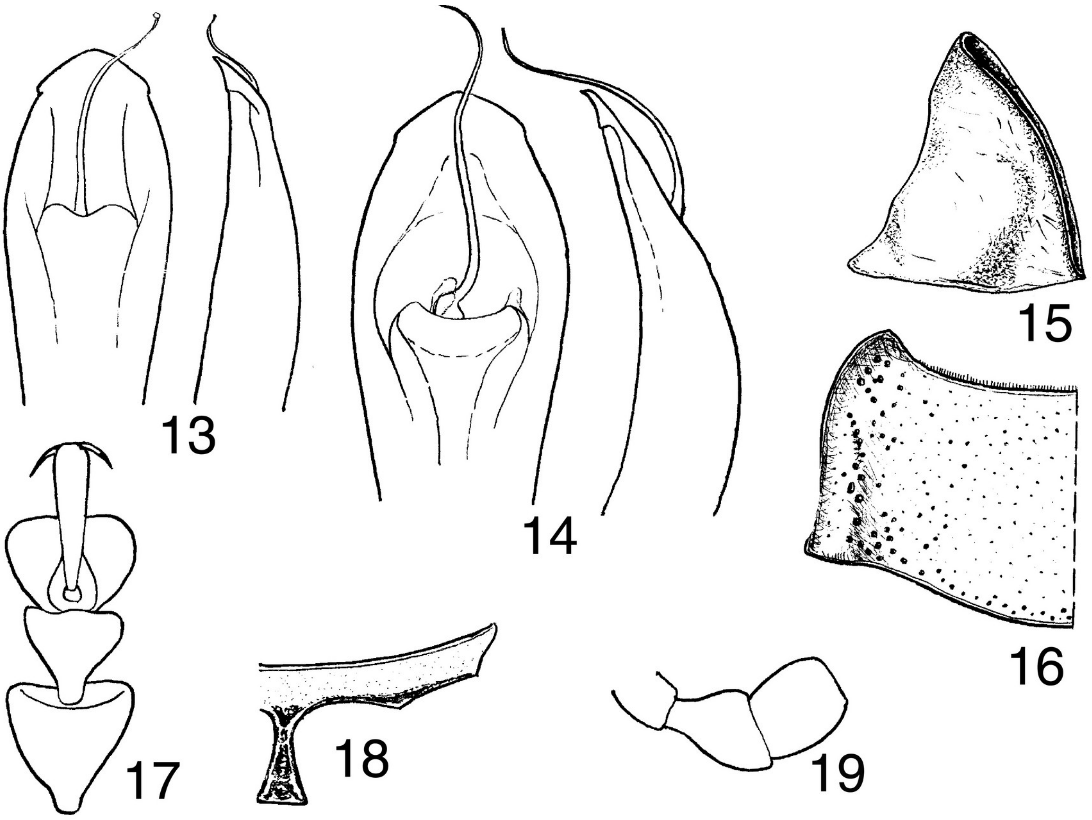
3(4) Dorsum green or golden green with head and pronotum coppery (in one female from Namangan), antennae and tarsi piceous. Pygidium with shallow impression in basal ½. Aedeagus without subapical denticles. Length 7.0–9.2 mm. Species from W Tien Shan. Figs. 8–12.

Ch. tshatkalica (Lopatin, 1970b)



***Pezocrosita* (*cyanopurpurea*) figures 1-12**: 1–6 – *Chrysolina helenae* (W Tien Shan): 1 – male (Ugam Ridge), total view, 2, 3 – variation of shape of pronotum: 2 – male (Pskem Mts.), 3 – male (Talas Alatau), 4 – male, maxillary palpus (Pskem Mts.), 5, 6 – variation of shape of aedeagus in males from Ugam Ridge (5 – paratype *Ch. glebi*); 7 – *Ch. helenae* (holotype, W

Tien Shan: Ugam ridge). 8–12 – *Ch. tshatkalica*, male (W Tien Shan): 8 – fore-tarsus, 9 – hind-tarsus, 10 – maxillary palpus, 11 – total view, 12 – aedeagus, dorsal and lateral view. (Orig.)



***Pezocrosita* (*cyanopurpurea*) figures 13–19:** *Chrysolina cyanopurpurea*: 13–14 – aedeagus, dorsal and lateral view: 13 – topotype *Ch. cyanopurpurea* (N-W China: Kuldzha), 14 – male (holotype *Ch. belousovi,* N-W China: Xinjiang), 15 – prothoracic hypomeron, male (N-W China: Kuldzha), 16 – pronotum, female (N-W China: Kuldzha), 17–19 – male (N-W China: Kuldzha): 17 – fore-tarsus, 18 – prosternum, 19 – maxillary palpus. (Orig.)

Pezocrosita (*obovata*) species group

Diagnosis

Beetles small or moderately large (4.1–7.6 mm).

Above dark metallic, unicolorous or coloration of head and pronotum differs from coloration of elytra.

Antenna inserted closer to clypeus than to eye or at middle between clypeus and eye.

Pronotum with rounded lateral sides. Lateral callus separated from disc by narrow groove in basal ¼–½ and moderately deep to shallow wide impression anteriorly. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore absent.

Prothoracic hypomeron weakly convex, with shallow impression or without impression along outside, with more or less distinct wrinkles there, without outer border. Basal fold distinct or absent in different species.

Elytron without humeral callus, with 10 regular rows (or 9 rows, if scutellar row absent) of fine dense punctures, connected to each other with fine longitudinal wrinkles. Rows regular or undulate and slightly irregular, equidistant or paired. Intervals flat or slightly convex (intraspecific variation).

Elytral epipleura ciliate near apex.

Hind wings vestigial.

Tarsomere 1 with short glabrous basal "heel". In female tarsomeres 1–3 with entire sole or all tarsomeres 1 with very narrow glabrous stripe in basal ½ beneath (female of *Ch. regeli* is unknown). In male tarsomeres 1–3 with entire sole, slightly or greatly dilated.

Pygidium without longitudinal medial groove.

Last abdominal sternite convex in both sexes.

Aedeagus oval in cross-section, weakly or greatly curved dorso-ventrally, with parallel lateral sides or broadened toward apex. Flagellum thin, exposed.

Distribution: Mountain regions of Central Asia, Tibet, Qinghai, Sichuan, Gansu, C Mongolia. Species are distributed mostly allopatric.

Key to species

The members of this species group are rather close externally to each other. Examination of male aedeagus is necessary for the species identification.

1(10) Aedeagus without apical projection.

2(5) In lateral view, apex of aedeagus narrowly turned down. Basal fold of prothoracic hypomeron distinct.

3(4) Pronotal lateral groove moderately deep in basal ⅓–½. Dorsum copper bronze or dark bronze. Elytral rows equidistant, intervals flat. Male tarsomeres 1–3 narrow. Length 5.0–6.2 mm. Subspecies from N-W, C Tien Shan. Fig. 1.
Ch. obovata obovata (Jacobson, 1895)

4(3) Pronotal lateral groove weak near base. Dorsum coppery, purplish blue, green with (or without) golden tint, or head and pronotum purplish coppery, elytra bluish green, or head and pronotum blue, elytra golden green. Elytral rows equidistant, intervals flat. Male tarsomeres 1–3 narrow. Length 5.0–6.4 mm. Subspecies from N Tien Shan.
Ch. obovata almaatica (Lopatin, 1962)

5(2) In lateral view, apex of aedeagus not turned down.

6(7) Aedeagus narrowed at sides of apical orifice. Basal fold of prothoracic hypomeron absent. Dorsum bronze, dark olivaceous, or dark blue. Male tarsomeres 1–3 slightly broadened. Length 6.8–7.6 mm. Species from China (Sichuan). Figs. 9–12.
Ch. freyensis Kippenberg, 2010

7(6) Aedeagus not narrowed at sides of apical orifice.

8(9) In lateral view, aedeagus with apex thick. Basal fold of prothoracic hypomeron distinct. Dorsum dark bronze, head and pronotum with greenish reflection, or head and pronotum golden green, elytra bronze with epipleura greenish. Elytral rows equidistant, all intervals weakly convex, or intervals 3, 5, 7 weakly convex, others almost flat. Male tarsomeres 1–3 broad. Length 4.1– 5.8 mm. Species from C Mongolia. Figs. 13–20.
Ch. dubeshkoae L.Medvedev, 1974

9(8) In lateral view, aedeagus with apex thin. Basal fold of prothoracic hypomeron absent. Dorsum dark green with golden and purple reflection or dark bronze. Elytral rows equidistant, intervals flat or slightly convex. Male tarsomeres 1–3 broad. Length 4.8–5.4 mm. Species from China (Qinghai). Fig. 7. *Ch. yupeiyuae* Lopatin, 1998

10(1) Aedeagus with apical projection.

11(18) Aedeagus with narrow apical projection.

12(13) Aedeagus broadened toward apex in apical ½; in lateral view, apical projection thin, turned up. Basal fold of prothoracic hypomeron distinct. Dorsum golden green, bluish green, blue, violet, bronze, or coppery. Elytral rows equidistant, intervals flat. Male fore- and mid-tarsomeres 1–3 broad. Length 5.2–7.1 mm. Species from N-W Tien Shan (Kyrgyz Alatau). Fig. 2.
Ch. kiritshenkoi (Lopatin, 1970b)

13(12) Aedeagus with parallel lateral sides in apical ½.

14(17) In lateral view, apical projection of aedeagus thin, turned up. Male tarsomeres 1–3 narrow.

15(16) Elytral rows equidistant, intervals flat or weakly convex. Basal fold of prothoracic hypomeron distinct. Head and pronotum bronze, elytra violet. Length 4.5–5.5 mm. Species from N Tien Shan (Kungey-Alatau). Fig. 3. *Ch. mohri* (Lopatin, 1970b)

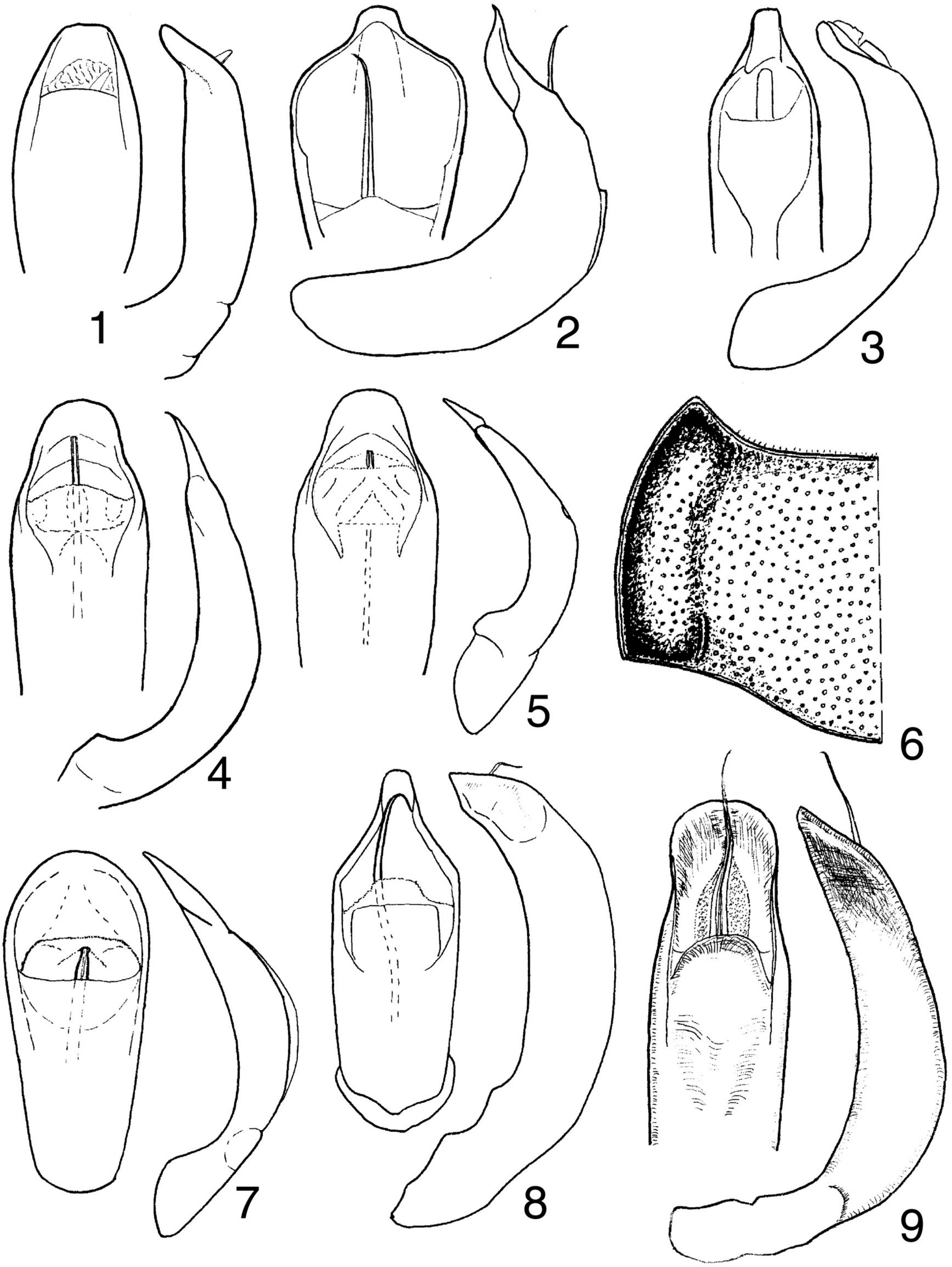
16(15) Elytral rows paired, intervals flat. Basal fold of prothoracic hypomeron absent. Dorsum dark bronze. Length 6.5–6.7 mm. Species from China (Sichuan). Fig. 22. *Ch. irinae* Lopatin, 2008

17(14) In lateral view, apical projection of aedeagus thick, not turned up. Elytral rows paired, intervals flat. Basal fold of prothoracic hypomeron absent. Dorsum dark brassy. Male tarsomeres 1–3 narrow, only foretarsomere 1 slightly broadened. Length 6.1 mm (male), female is unknown. Species from China (E Tien Shan). Fig. 8. *Ch. regeli* Lopatin, 2002

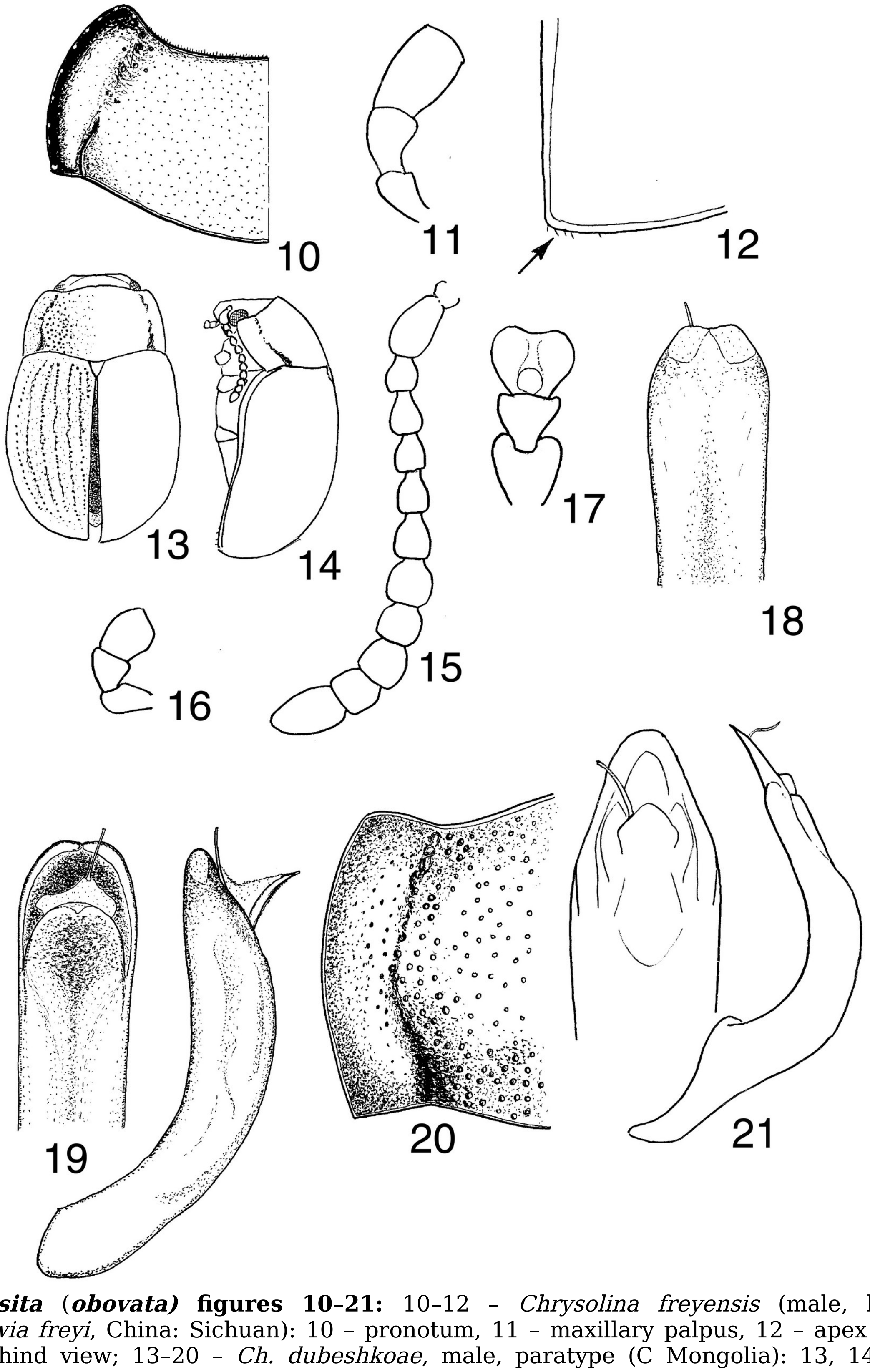
18(11) Aedeagus with broad apical projection. Basal fold of prothoracic hypomeron distinct. Dorsum dark bronze. Male tarsomeres 1 and 3 broad in fore- and mid-tarsi, tarsomere 1 broad in hind-tarsus.

19(20) Elytral rows equidistant or almost so, all intervals flat or intervals 2 and 4 weakly convex. Apical projection of aedeagus more delimited from the rest of aedeagus. Length 5.5–6.2 mm. Species from China (Tibet, Gansu). Figs. 4–6. *Ch. przewalskii* (Jacobson, 1895)

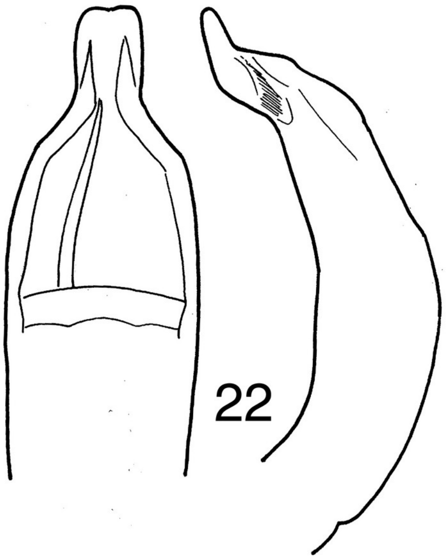
20(19) Elytral rows 2–3, 4–5, 8–9 distinctly paired, intervals 2, 4, 8 distinctly convex, others flat. Aedeagus more evenly narrowed in the apical part, with apical projection weakly delimited. Length 6.4 mm (male). Species from China (Gansu). Fig. 21. *Ch. gruevi* Lopatin, 2007



***Pezocrosita* (*obovata*) figures 1-9:** 1–3 – aedeagus, dorsal and lateral view: 1 – *Chrysolina obovata obovata* (syntype, Kyrgyzstan), 2 – *Ch. kiritshenkoi* (topotype, Kyrgyzstan), 3 – *Ch. mohri* (topotype, "Ala-Tau, Matthiessen"); 4–6 – *Ch. przewalskii*: 4 – neotype *Chrysomela przewalskii* (Tibet: Amdo), aedeagus, dorsal and lateral view, 5 – male (holotype *Chrysolina burchana*, E Tibet), aedeagus, dorsal and lateral view, 6 – neotype *Chrysomela przewalskii*, pronotum; 7–9 – aedeagus, dorsal and lateral view: 7 – *Ch. yupeiyuae*, holotype (China: Qinghai), 8 – *Ch. regeli*, holotype (China: E Tien Shan), 9 – *Ch. freyensis* (paratype *Semenowia freyi*, China: Sichuan). (Orig.)



***Pezocrosita* (*obovata)* figures 10–21:** 10–12 – *Chrysolina freyensis* (male, holotype *Semenowia freyi*, China: Sichuan): 10 – pronotum, 11 – maxillary palpus, 12 – apex of right elytron, hind view; 13–20 – *Ch. dubeshkoae*, male, paratype (C Mongolia): 13, 14 – total dorsal and lateral view, 15 – antenna, 16 – maxillary palpus, 17 – fore-tarsus, 18 – aedeagus, ventral view, 19 – aedeagus, dorsal and lateral view, 20 – pronotum; 21 – *Ch. gruevi*, male (holotype, China: Gansu), aedeagus, dorsal and lateral view. (Orig.)



Pezocrosita (***obovata)*** **figure 22:** *Chrysolina irinae,* male (holotype, Sichuan), aedeagus, dorsal and lateral view. (Orig.)

Pezocrosita (*roborowskii*) species group

Diagnosis

Small (4.9–5.4 mm) beetles.

Above dark bronze.

Antenna inserted 1.3 X closer to clypeus than to eye.

Pronotum (Figs. 6, 7) broadest basally, with lateral sides weakly convergent forwards, almost straight in basal ½ and slightly arc-shaped in apical ½, with wide shallow lateral impression along entire length. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore absent.

Prothoracic hypomeron weakly convex, without border along outside, without distinct wrinkles and basal fold.

Elytron without humeral callus, with 7 or 9 regular equidistant puncture rows. Scutellar row absent. Rows consist of sparse, medium-sized, hollow-like punctures, which not connected to each other by longitudinal wrinkles; 8–12 punctures in 5th row. Intervals weakly convex.

Elytral epipleura ciliate in apical part.

Hind wings vestigial.

Tarsomere 1 with short glabrous basal "heel"; tarsomeres 1–3 with entire sole in both sexes (Fig. 5). In male fore- and mid-tarsomeres 1–3 slightly dilated (Figs. 3, 4).

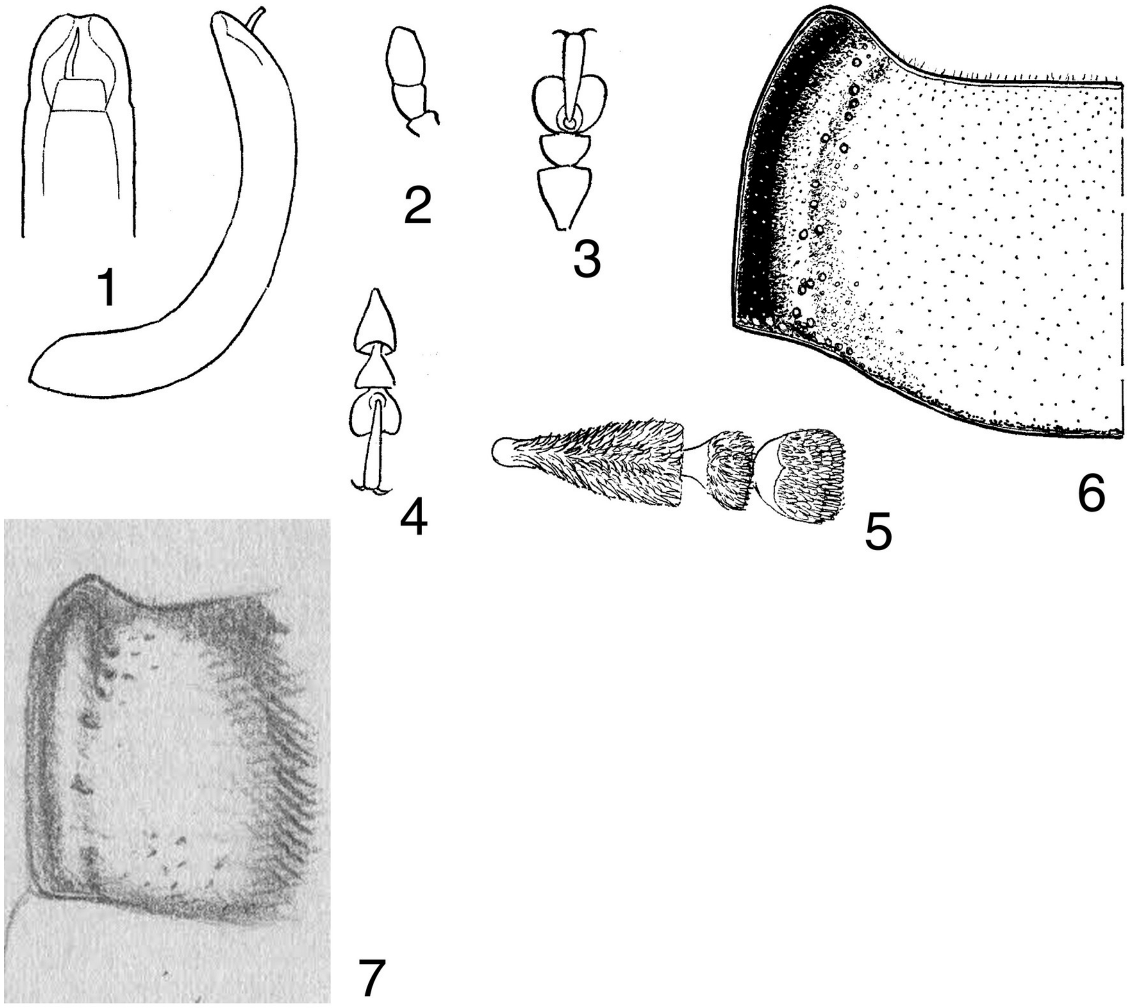
Pygidium without longitudinal medial groove in apical ½, with weak impression basally.

Last abdominal sternite convex in both sexes.

Aedeagus (Fig. 1) flattened dorso-ventrally, evenly curved, with parallel lateral sides, with apex rounded and bearing 2 small subapical denticles on ventral side. Flagellum thin, exposed.

Distribution: China (Qinghai).

This group includes only one species, *Ch. roborowskii* (Jacobson, 1895) (Figs. 1–7).



***Pezocrosita* (*roborowskii*) figures 1–7:** *Chrysolina roborowskii*: 1–4 – male (Tibet): 1 – aedeagus, dorsal and lateral view, 2 – maxillary palpus, 3 – fore-tarsus, 4 – hind-tarsus; 5 – female (Tibet), hind-tarsus underside; 6–7 – pronotum: 6 – female (Tibet), 7 – male (holotype *Chrysomela fallax*, Tibet). (Fig. by an unknown author: 7, others – original figs. by the author)

***Pezocrosita* (*sahlbergiana*) species group**

Diagnosis

Beetles moderately large (6.0–9.0 mm).

Above black with elytra partly or mostly red, or above entirely bronze.

Antenna inserted 1.4–1.6 X closer to clypeus than to eye.

Pronotum with evenly rounded lateral sides, or almost parallel at mid-length, or almost parallel in basal ½. Lateral callus separated from disc by narrow arc-shaped groove along entire length. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore absent.

Prothoracic hypomeron longitudinally convex, with shallow impression and distinct irregular wrinkles along outside, without outer border. Basal fold distinct, more or less deep.

Elytron without humeral callus, with 10 paired rows of medium-sized or fine dense punctures. Rows regular, straight or undulate. Intervals flat or hardly convex, especially between rows forming one pair (intraspecific variation).

Elytral epipleura densely ciliate near apex.

Hind wings absent.

Tarsomere 1 with short glabrous basal "heel". Female: tarsomeres 1–3 narrow, all tarsomeres 1 with narrow or broad glabrous stripe along almost entire length beneath, others with entire sole. Male: tarsomeres 1–3 with entire sole, moderately or greatly dilated.

Pygidium without longitudinal medial groove in apical ½, and with broad impression in basal 1/3–1/2.

Last abdominal sternite convex in both sexes.

Aedeagus flattened, moderately evenly curved dorso-ventrally, with parallel lateral sides, with apex triangular, slightly S-shaped in lateral view. Flagellum thin, narrowing at the end, exposed.

Distribution: 1) N Urals, 2) Sayans and N Mongolia, 3) Kazakh low hills (Mt. Kent), 4) Altai; each region is inhabited by one species.

Key to species

1(4) Elytra bicolor, red with black, head and pronotum black. In female, all tarsomeres 1 with more or less broad glabrous stripe beneath.

2(3) Elytra black, broadly margined with red basally and laterally, epipleura red with black lower margin. Pygidium red. Last abdominal sternite red with unclear black medial spot. Above shining (male) or dull (female). Elytral intervals covered with finer and sparser punctures. Male tarsomeres 1–3 greatly broadened. Length 6.0–8.5 mm. Species from Sayans and N Mongolia. Figs. 1–8.

Ch. sahlbergiana (Jacobson, 1901b)

3(2) Elytra red with black suture and apical ½ of epipleura. Pygidium red with black apical margin. Last abdominal sternite piceous. Above shining in both sexes. Elytral intervals covered with larger and denser punctures. Male tarsomeres 1–3 moderately broadened. Length 7.0–9.0 mm. Species from Kazakh low hills. Figs. 9–17.

Ch. medvedevi (Lopatin, 1970b)

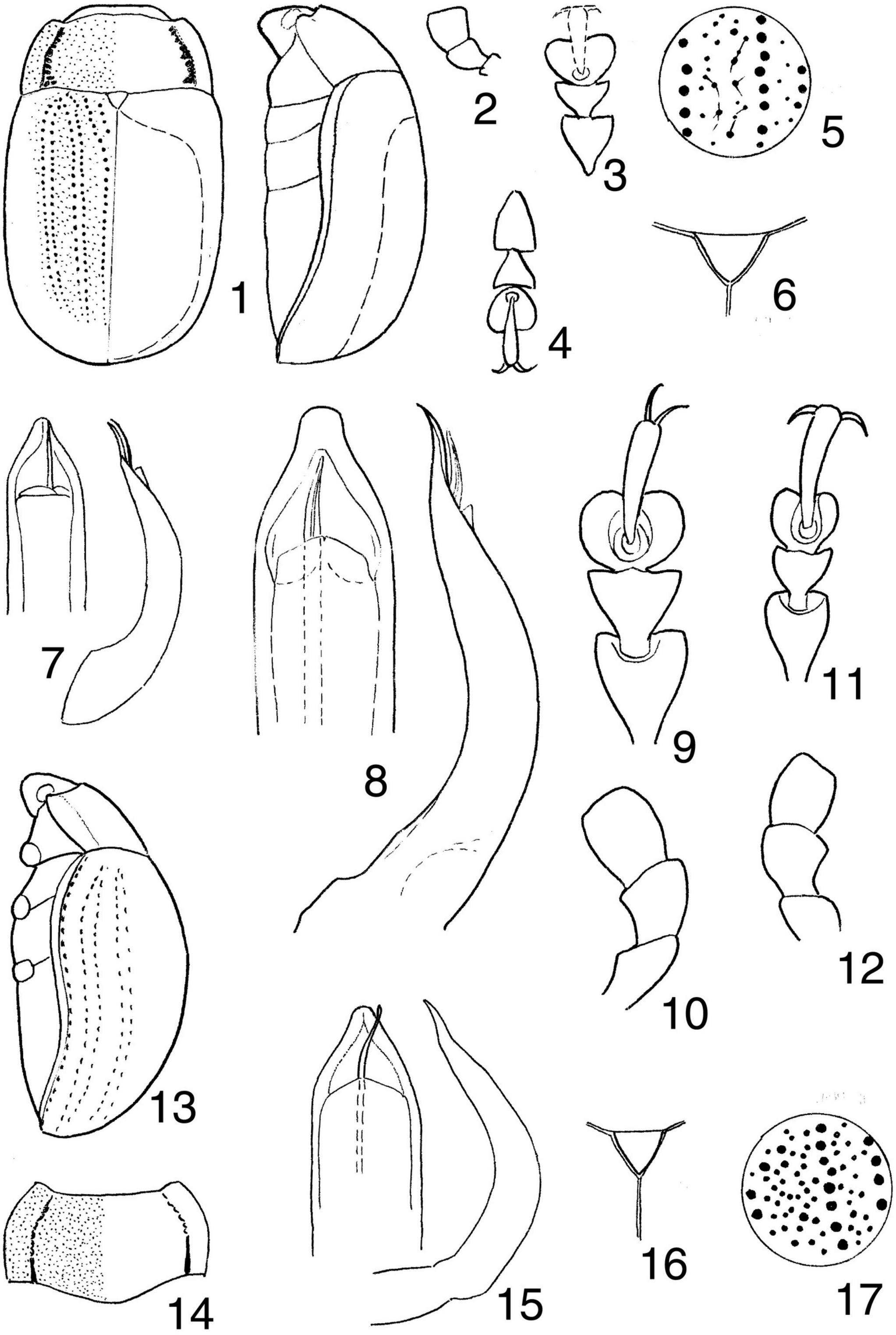
4(1) Dorsum entirely metallic or pronotum brown and elytra red. In female, all tarsomeres 1 with narrow glabrous stripe beneath.

5(6) Body some smaller: length 6.2–7.0 mm (male), 6.9–8.3 mm (female), width 4.0–4.3 mm (male), 4.2–5.0 mm (female). Pronotum 1.8–1.9X as broad as long, with lateral sides almost parallel in basal part, slightly convergent towards base. Elytra bronze, pronotum and scutellum bronze-green, or head and pronotum black, elytra dark coppery, or elytra red with blackish suture and punctures, pronotum dark brown. Pronotal lateral calli separated from disc by entire shallow furrow at most length, and by very deep furrow in basal ¼, with sharp outer border along entire length. Species from N Urals. Figs. 18–20.

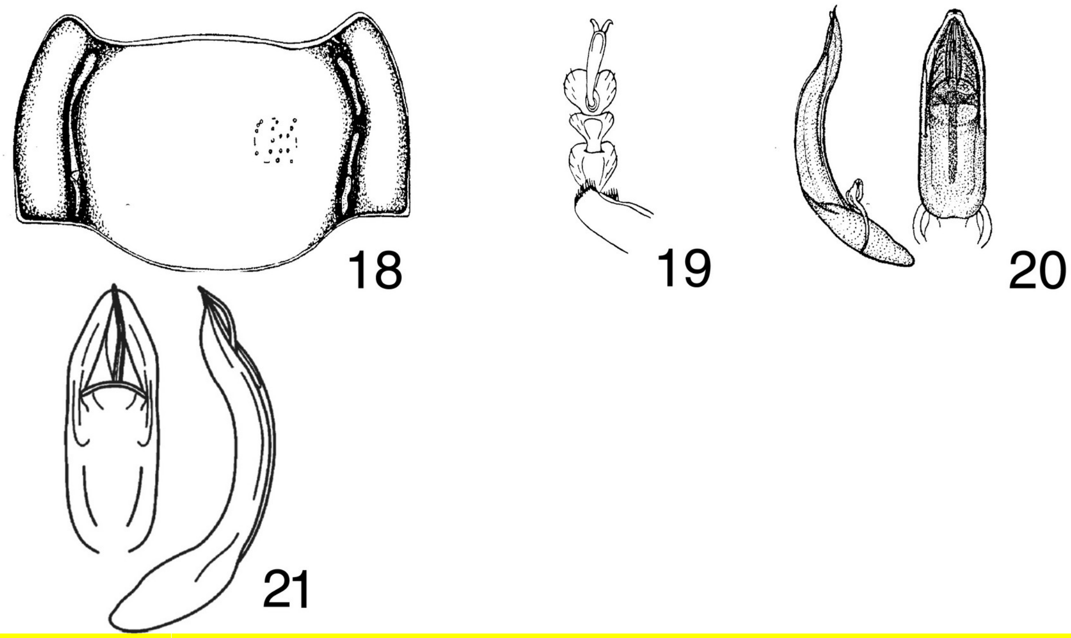
Ch. hyperboreica Mikhailov, 2002b

6(5) Body some larger: length 6.8–7.5 mm (male), 7.4–8.0 мм (female), width 4.2–4.7 mm (male), 4.5–4.9 mm (female). Pronotum 2.0X as broad as long, with lateral sides broadly rounded, distinctly convergent towards base. Pronotal lateral calli separated from disc by shallow furrow filled with large, partly coalescent punctures in anterior 2/3, and by deep furrow with sharp outer border in basal 1/3. Elytra dark green, pronotum and scutellum blackish bronze or bluish black, rarely dorsum entirely violet with green reflection or blackish bronze. Species from Altai region: Korgon ridge. Fig. 21.

Ch. korgonica Mikhailov, Reshetnikov, 2021



***Pezocrosita* (*sahlbergiana*) figures 1–17:** 1–7 – *Chrysolina sahlbergiana*, male, topotype (Siberia, Minusinsk): 1 – total view, 2 – maxillary palpus, 3 – fore-tarsus, 4 – hind-tarsus, 5 – elytral punctures, 6 – scutellum, 7 – aedeagus, dorsal and lateral view; 8 – *Ch. sahlbergiana*, male, syntype (Siberia, Minusinsk), aedeagus, dorsal and lateral view; 9–17 – *Ch. medvedevi*, paratypes (C Kazakhstan): 9 – male, fore-tarsus, 10 – male, maxillary palpus, 11 – female, fore-tarsus, 12 – female, maxillary palpus, 13 – male, lateral view, 14 – male, pronotum, 15 – aedeagus, dorsal and lateral view, 16 – male, scutellum, 17 – male, elytral punctures. (Orig.)



Pezocrosita (***sahlbergiana***) **figures 18–21:** 18–20 **–** *Chrysolina hyperboreica*, male, holotype (N Urals): 18 – pronotum, 19 – fore-tarsus, 20 – aedeagus, dorsal and lateral view; 21 **–** *Ch. korgonica*, male, holotype (Altai), aedeagus, dorsal and lateral view. (After: Mikhailov, 2002: 18–20; Mikhailov, Reshetnikov, 2021: 21)

Subgenus *Pierryvettia* Bechyné, 1950a

Diagnosis

Body metallic entirely or metallic with elytra rufous or brown with more or less distinct metallic lustre, pronotal and elytral coloration without colored stripes.

Last maxillary palpomere elongate, similar in both sexes, as wide as penultimate palpomere or narrower than latter.

Antenna inserted closer to clypeus than to eye, narrow.

Pronotum weakly or moderately swollen laterally along entire length. Lateral impression absent or shallow, broad, developed basally or along entire length. Pronotum laterally covered by medium-sized or large punctures. Pronotal disc unevenly covered by fine, or medium-sized, or large punctures. Anterior side of pronotum marginated and ciliate. Anterior setiferous pore present in *Chrysolina sumatrensis, Ch. coerulipes, Ch. shapaensis, Ch. aeneomicans, Ch. baronii*, absent in the others.

Prothoracic hypomeron weakly convex or almost flat, wrinkled laterally; mostly with distinct outer border, this border obsolete only in *Ch. stictica, Ch. sumatrensis*, and *Ch. conglomerata*. Basal fold distinct, or weak, or absent. Intercoxal prosternal process medially longitudinally impressed along entire length.

Metasternum entirely marginated anteriorly.

Elytron with weak humeral callus. Elytral puncturation arranged in paired rows which rarely distinct, but usually indistinct because of irregular punctures in intervals, or elytral puncturation mostly irregular.

Elytral epipleura horizontal near apex, invisible there in lateral view, densely ciliate near apex.

Hind wings normally developed.

Tarsomeres 1–3 narrow, with entire sole, similar in both sexes. Claw tarsomere without denticles, or with small denticles, or with large denticles beneath in different species.

Pygidium with furrow in basal ½ or along entire length.

Last abdominal sternite evenly convex, with apical margin rounded in female, broadly emarginated, or truncate, or rounded in male.

Aedeagus tube-shaped, curved dorso-ventrally, with apex different. Flagellum narrow, exposed.

Differential diagnosis

The combination of: 1) normally developed hind wings, 2) horizontal elytral epipleura posteriorly, 3) elytral punctures mostly confused or arranged in rows hardly traced among irregular punctures in intervals, 4) metasternum marginated anteriorly, 5) pygidium with medial furrow at least in basal ½, 6) elytral coloration uniform, without colored stripes, is well suited for distinguishing subgenus *Pierryvettia* from any other *Chrysolina* of Oriental region.

Key to species

1(4) Claw tarsomere with 2 large denticles below at apex. Last maxillary palpomere narrower than penultimate one. Elytra without sutural furrow at apex or with only very short furrow. Pygidium without medial furrow in apical ⅓. Prothoracic hypomeron without basal fold. Pronotum without lateral impressions.

2(3) Elytra covered with large punctures which as wide as punctures on pronotum laterally. Apex of aedeagus triangular, forming obtuse angle (greater than 90°), with 2 apical denticles below, these denticles visible in dorsal view. Dorsum shining, unicolorous, green, violet, blue, or bicolorous: head and pronotum blue, elytra green or violet. Length 7.8–9.5 mm. Figs. 10–16. Java, Sumatra, Sulawesi, Malaysia.

Ch. stictica (Stål, 1857)

3(2) Elytra covered with fine punctures which smaller than punctures on pronotum laterally. Apex of aedeagus rounded triangular, with fine lateral denticles. Dorsum shining, bicolorous: head, pronotum, and scutellum dark green, elytra red with weak metallic violet tint, or head golden black, pronotum and scutellum black with bronze reflection, elytra brown with bronze reflection. Length 7.6–12.7 mm. Figs. 17–20. Sumatra, Kalimantan.

Ch. sumatrensis (Jacoby, 1884)

4(1) Claw tarsomere without denticles below at apex or with only very small denticles.

5(12) Pygidium with distinct medial furrow in apical ⅓. This furrow reaches the top of pygidium (in most species) or nearly reaches (in *Ch. annamensis*). Last maxillary palpomere as wide as penultimate one or only hardly narrower than latter.

6(7) Pronotum with distinct wide lateral impressions along entire length. Elytron with long sutural furrow as long as 2 X pygidium length. Claw tarsomere with 2 very small apical denticles below. Dorsum sericeous or dull, bronze, unicolorous or with pronotum with bluish tint. Length 9.0–10.7 mm. Fig. 7. India.

Ch. coerulipes (Harold, 1874)

7(6) Pronotum without lateral impressions. Claw tarsomere without apical denticles below.

8(9) Aedeagus widened toward apex and with obtuse apical margin, without apical denticles. Elytra with long sutural furrow as long as 2 X pygidium length. Dorsum sericeous or dull, bronze. Length 6.4–7.0 mm in the specimens examined, 8.0–8.5 mm in the original description (Chen, 1934). Fig. 8. N Vietnam, Laos

Ch. annamensis Chen, 1934

9(8) Aedeagus with apical denticles. Elytra with very short sutural furrow which as long as pygidium. Elytra shining.

10(11) Prothoracic hypomeron with distinct basal fold. Aedeagus with 2 apical denticles laterally. Head and pronotum sericeous, elytra shining. Dorsum coppery or bronze. Length 7.4–9.0 mm. Figs. 33, 55–58. N-E India, Laos.

Ch. baronii Daccordi, 1979

11(10) Prothoracic hypomeron without basal fold or with shallow fold. Aedeagus with 2 apical denticles below, these denticles invisible in dorsal view. Dorsum shining, brown with strong bronze luster. Length 7.1– 8.5 mm. Figs. 1, 9. China (Yunnan).

Ch. aeneomicans Chen, 1934

12(5) Pygidium without distinct medial furrow in apical ⅓.

13(22) Elytra and pronotal lateral sides covered with large punctures. Elytral punctures rather sparse, 5th row consists of 12–16 punctures. Claw tarsomere with 2 small denticles below at apex.

14(19) Last maxillary palpomere as wide as penultimate one. Elytra with long sutural furrow as long as 2 X pygidium length.

15(16) Prothoracic hypomeron without basal fold or with shallow fold. Aedeagus slightly broadened apically, with apical margin almost truncate and bearing obtuse denticles ventrally. Body short-oval, almost hemispherical. Claw tarsomere with 2 small denticles below at apex. Dorsum shining or sericeous, unicolorous, bronze or rufous with bronze lustre, or bicolorous, with head, pronotum and scutellum dark golden green and elytra rufous with greenish lustre. Length 7.0–8.8 mm. Figs. 38–51. India.

Ch. fulvoaenea (Jacoby, 1900)

16(15) Prothoracic hypomeron with basal fold. Aedeagus without apical denticles.

17(18) Aedeagus apically rounded, with short distinct protrusion at the top. Elytral sutural furrow sharp. Dorsum shining, bronze, blue, brassy, golden green, or violet. Length 6.3–10.2 mm. Figs. 23–26, 34, 36, 37. India, Nepal, Bhutan, S China, Laos, Myanmar, Vietnam, Thailand.

Ch. separata separata (Baly, 1860)

18(17) Aedeagus apically rounded, without distinct protrusion or with only very short protrusion at the top. Elytral sutural furrow long but obsolete. Dorsum shining, blue, green or violet. By the size, shape and color of the body it is identical to *Ch. stictica*, but differs in the shape of last maxillary palpomere, absence of denticles on claw tarsomere, distinct lateral border of prothoracic hypomeron, and aedeagus structure. Length 7.6–9.5 mm. Java, Sumatra. Figs. 27–28.

Ch. separata subsp.

19(14) Last maxillary palpomere narrower than penultimate one. Elytra without sutural furrow.

20(21) Dorsum shining, entirely metallic, brassy, bronze, golden green, violet, unicolorous or with elytra dark brown with strong metallic luster. Aedeagus "anchor-shaped", with 2 apical denticles laterally. Prothoracic hypomeron shining, with small wrinkles laterally, with distinct lateral border, with weak basal fold. Length 8.2– 9.7 mm. Figs. 21, 22.

Ch. shapaensis L.Medvedev, 1987

21(20) Dorsum shining, head, pronotum, and scutellum bronze-green, elytra rufous, shine, without metallic luster. Underside of body brown with bronze-green lustre, legs blue. Prothoracic hypomeron without basal fold. Length 9.4 mm. Only one female from Nepal (Everest Mt.) is known. Male is unknown.

Ch. sp. 53

22(13) Elytra and pronotal lateral sides covered with small punctures. Elytral punctures very dense, mostly irregular, 5th row (if rows present) consists of about 25 punctures. Body elongate, weakly or moderately convex. Claw tarsomere without denticles below at apex.

23(30) Pronotum without lateral impression. Prothoracic hypomeron with distinct basal fold.

24(25) Dorsum shining, head and pronotum golden green, elytra brown with strong golden luster (also compare with *Ch. bowringii,* couplet 29). Length 7.1– 8.5 mm. Male is unknown to me. Fig. 6. Laos, N Vietnam.

Ch. auriventris Bechyné, 1950a

25(24) Dorsum weakly or moderately shining, differently colored.

26(27) Dorsum unicolorous, dark bronze, shining. Aedeagus without apical denticles. Length 6.5–8.1 mm. Figs. 2, 5. India, Sri Lanka, Nepal.

Ch. inconstans (Wiedemann, 1823)

27(26) Head and pronotum dark metallic, elytra usually rufous or brown with more or less strong metallic lustre; if elytra and pronotum of the same coloration, dark metallic, then aedeagus with 2 lateral angular projections at apex.

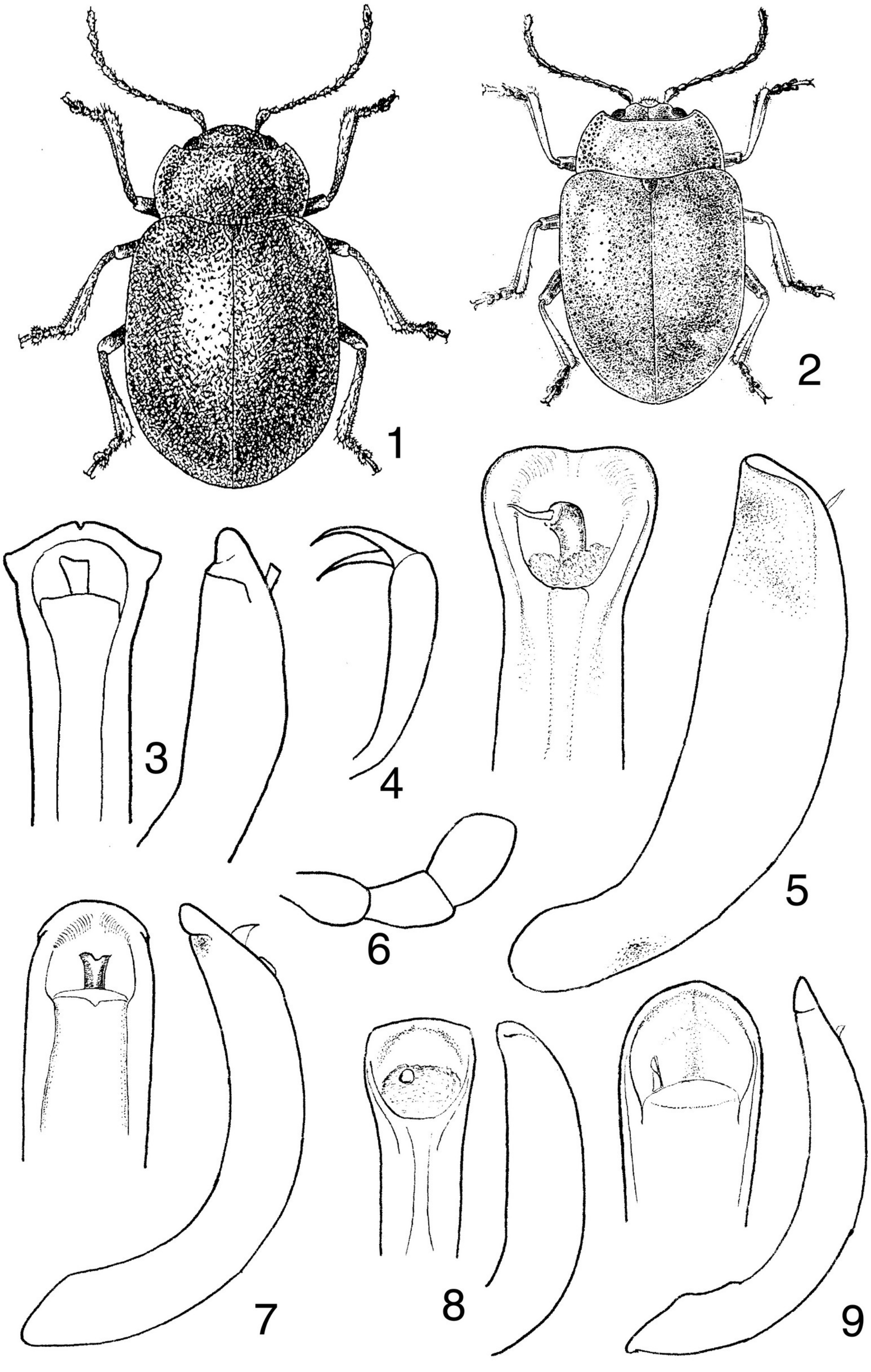
28(29) Aedeagus more extended apically, with lateral angular projections. Dorsum moderately shining or dull. Head and pronotum dark bronze, green or blue, elytra usually brown with bronze or blue lustre, rarely dorsum unicolorous, bronze. Length 6.3– 7.6 mm. Figs. 3, 4, 35. N-E and N India, Nepal, Myanmar.

Ch. conglomerata Maulik, 1926

29(28) Aedeagus less extended apically, with lateral rounded projections. Dorsum shining, bicolorous, head and pronotum dark blue or bluish green, elytra rufous with metallic reflection. Length 6.4–8.0 mm. Figs. 29–32. S China, Vietnam, Myanma.

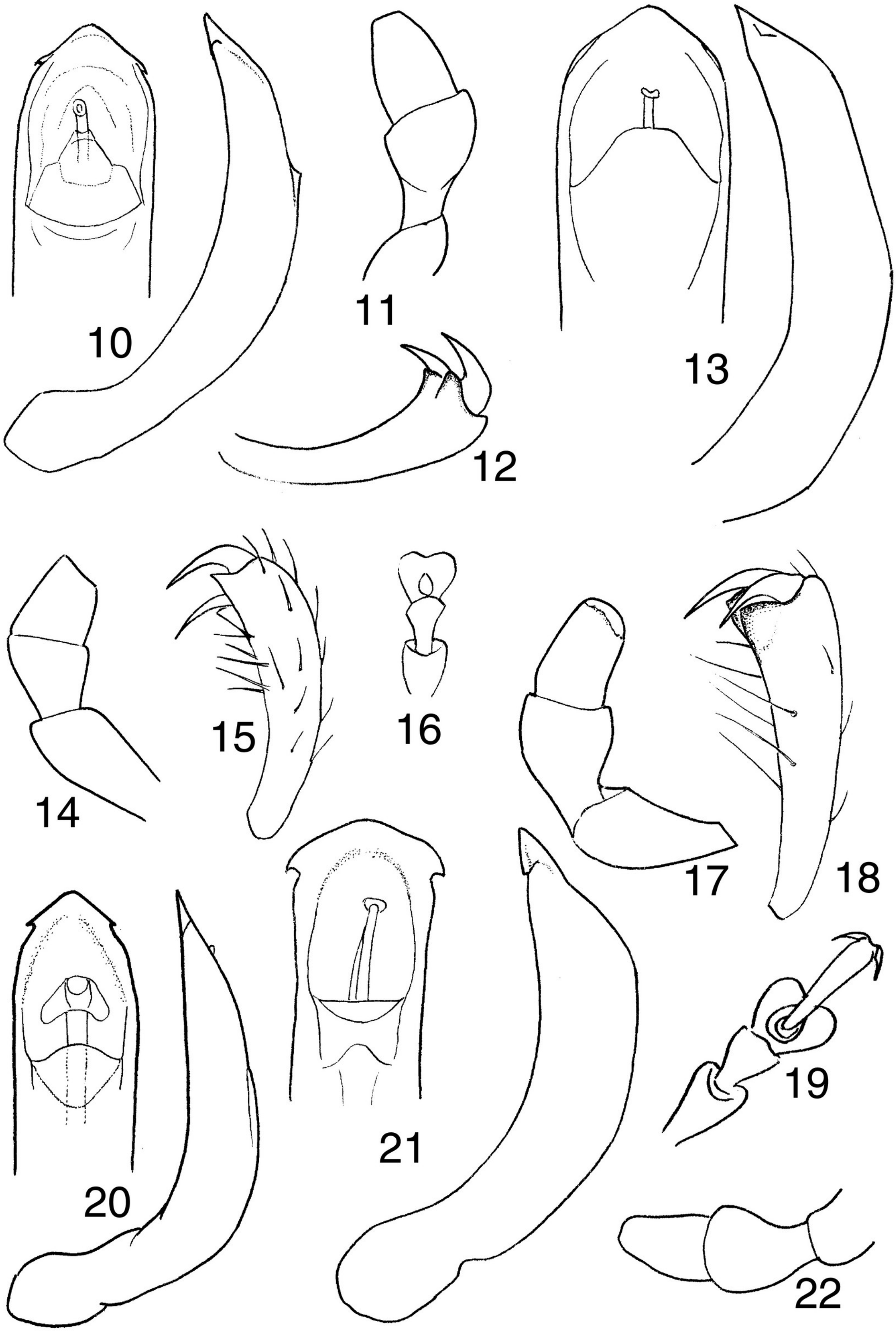
Ch. bowringii (Baly, 1860)

30(23) Pronotum with wide, shallow lateral impressions along entire length. Prothoracic hypomeron with weak basal fold. Dorsum wholly moderately shining or with elytra sericeous; dorsum dark bronze, head, pronotum, scutellum, with golden reflection. Length 8.0–8.1 mm (female). Male is unknown to me. Figs. 52–54. Pakistan.
Ch. karachia Maulik, 1926



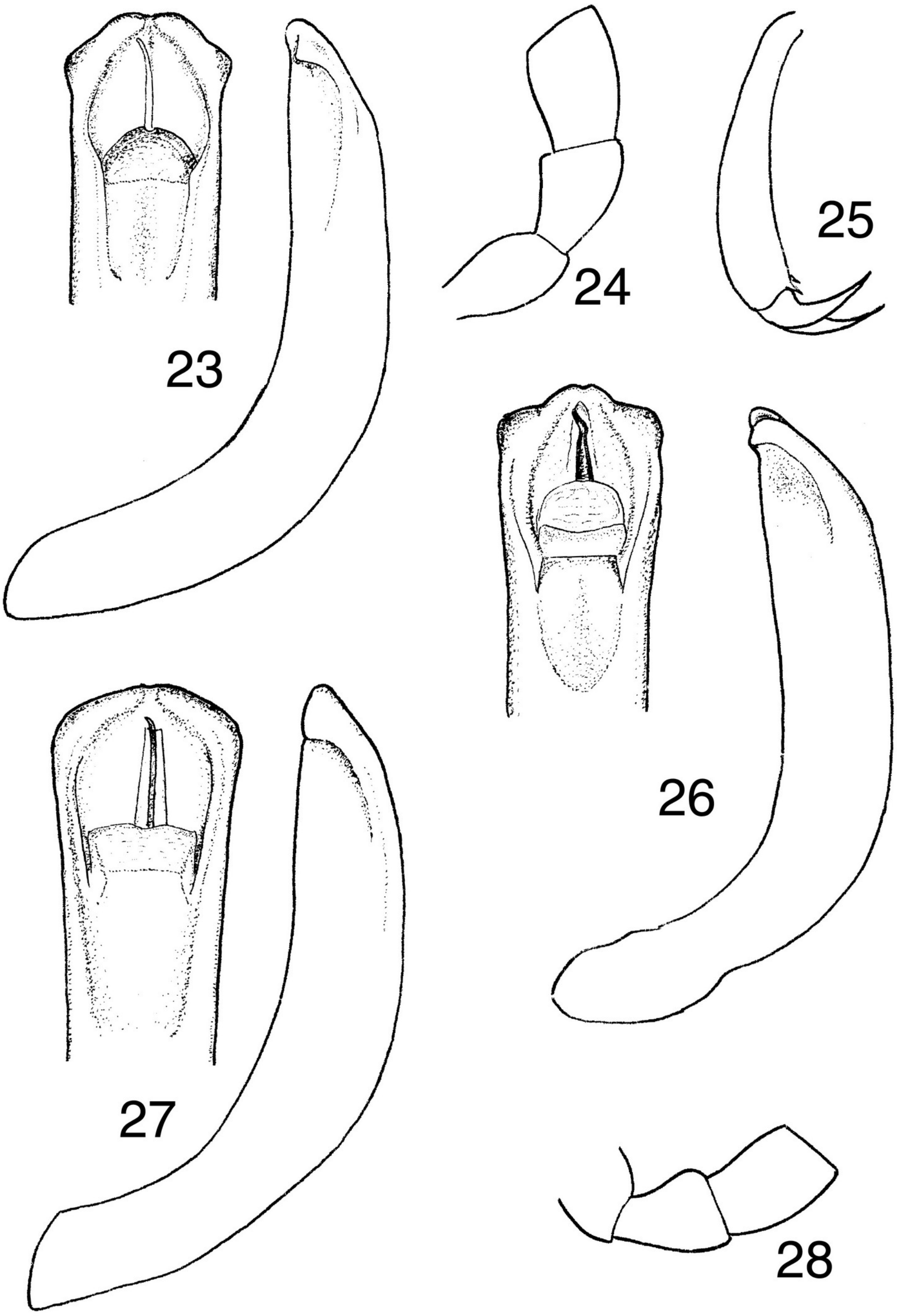
***Pierryvettia* figures 1-9:** 1–2 – total dorsal view: 1 – *Chrysolina aeneomicans*, 2 – *Ch. inconstans*; 3–4 – *Ch. conglomerata*: 3 – male (Nepal), aedeagus, dorsal and lateral view, 4 – 4th tarsomere (holotype *Ch. helferi*, Myanmar); 5 – *Ch. inconstans*, male (India), aedeagus, dorsal and lateral view; 6 – *Ch. auriventris*, female (N Vietnam), maxillary palpus; 7–9 – aedeagus, dorsal and lateral view: 7 – *Ch. coerulipes* (India), 8 – *Ch. annamensis* (holotype

Ch. vitalisi, N Vietnam), 9 – *Ch. aeneomicans* (China). (After: Chen, 1934: 1, Maulik, 1926: 2, others – orig.)

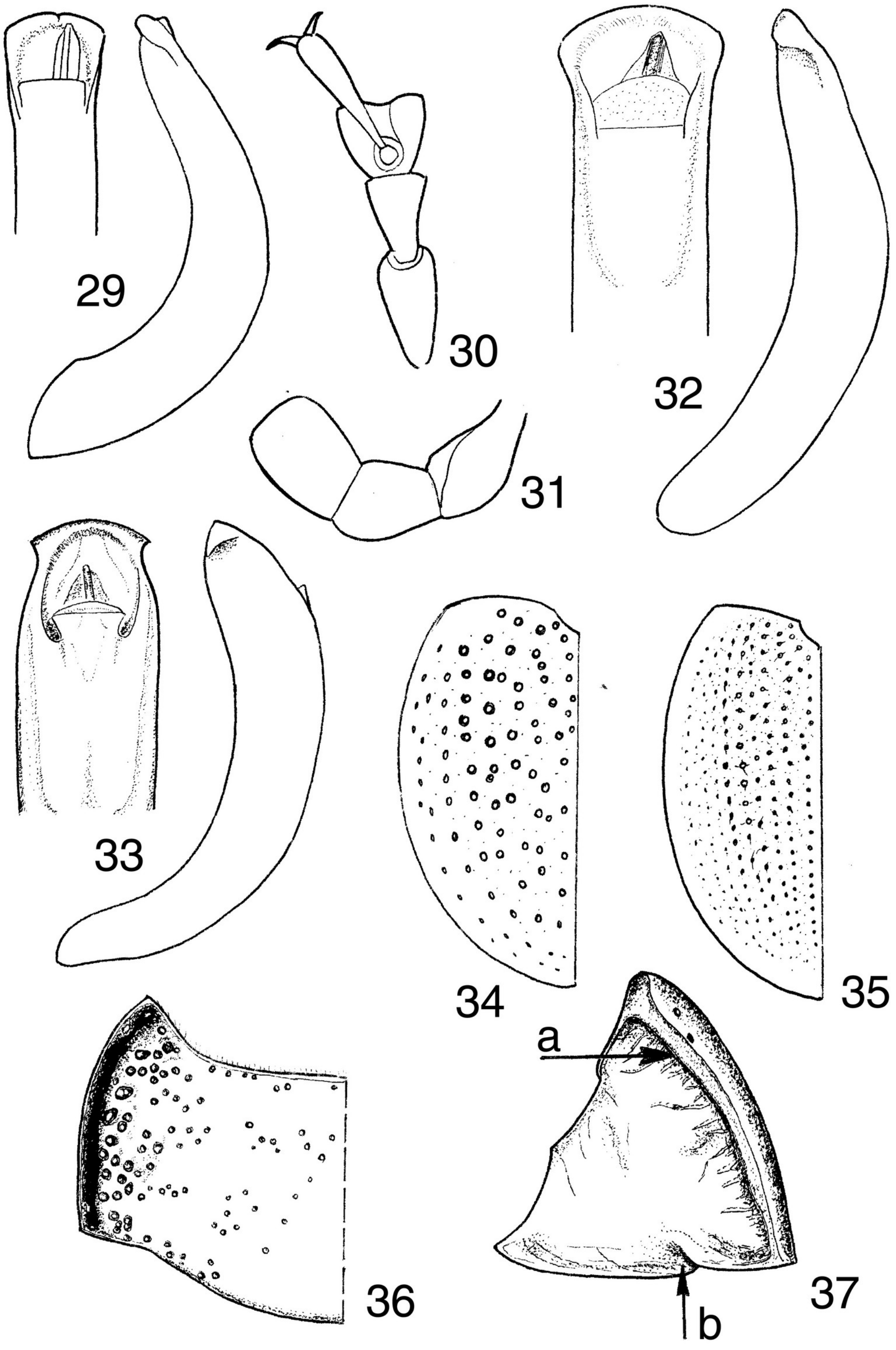


***Pierryvettia* figures 10–22:** 10–16 – *Chrysolina stictica*: 10–12 – male (Java): 10 – aedeagus, dorsal and lateral view, 11 – maxillary palpus, 12 – 4th fore-tarsomere, 13 – male (Sulawesi), aedeagus, dorsal and lateral view, 14–16 – female (syntype *Ch. ceylonica*, Sri-Lanka?): 14 – maxillary palpus, 15 – 4th tarsomere, 16 – fore-tarsus; 17–20 – *Ch. sumatrensis*: 17–19 – female (syntype *Ch. malayana*, Sumatra): 17 – maxillary palpus, 18 – 4th mid-tarsomere, 19 –

fore-tarsus, 20 – male (Sumatra), aedeagus, dorsal and lateral view; 21–22 – *Ch. shapaensis*, male (N Vietnam): 21 – aedeagus, dorsal and lateral view, 22 – maxillary palpus. (Orig.)

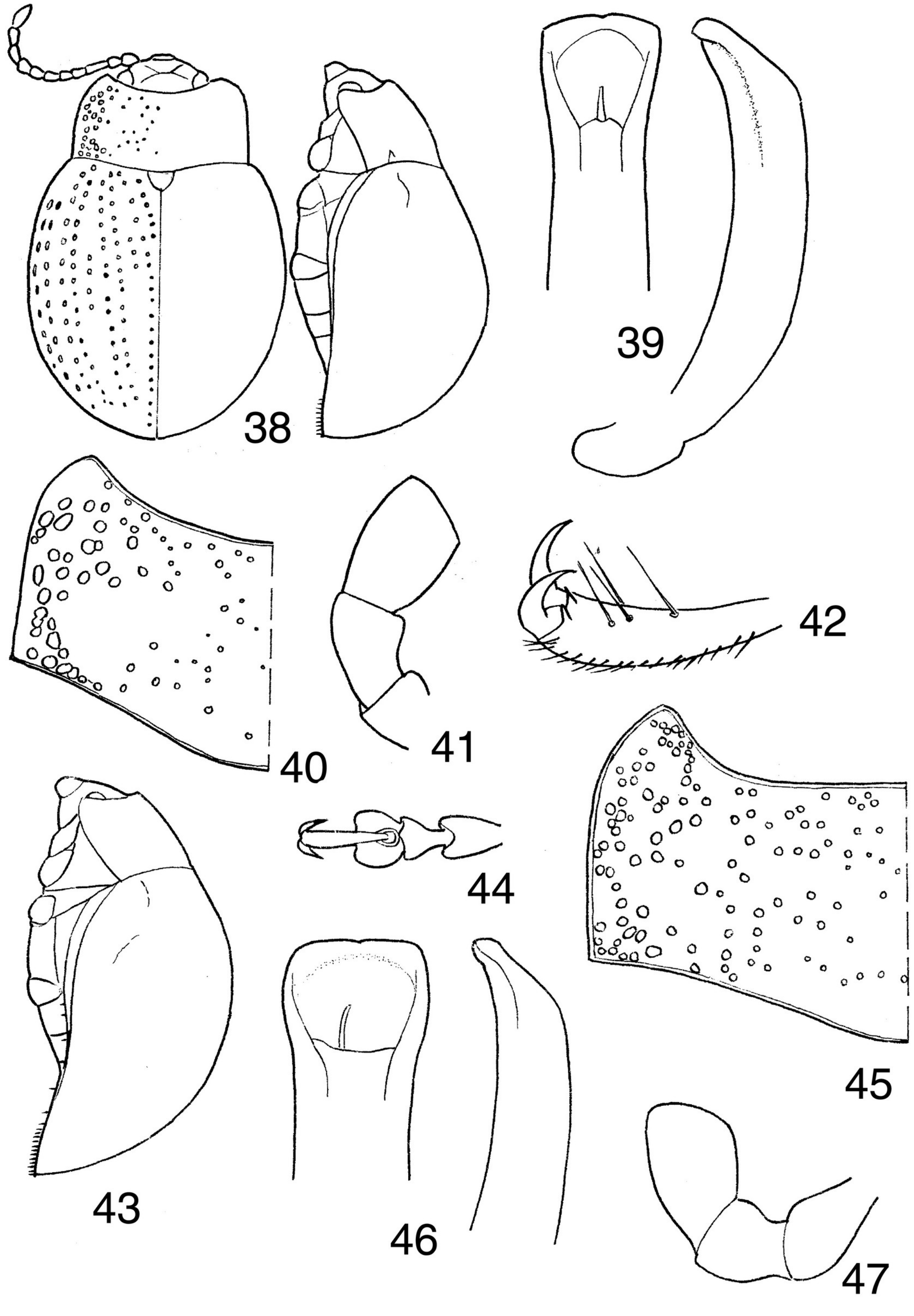


***Pierryvettia* figures 23–28:** 23–26 – *Chrysolina separata separata*: 23–25 – male (N India): 23 – aedeagus, dorsal and lateral view, 24 – maxillary palpus, 25 – 4th fore-tarsomere; 26 – male (syntype *Ch. aurata indosinensis*, N Vietnam), aedeagus, dorsal and lateral view; 27–28 – *Ch. separata* subsp., male (Java): 27 – aedeagus, dorsal and lateral view, 28 – maxillary palpus. (Orig.)



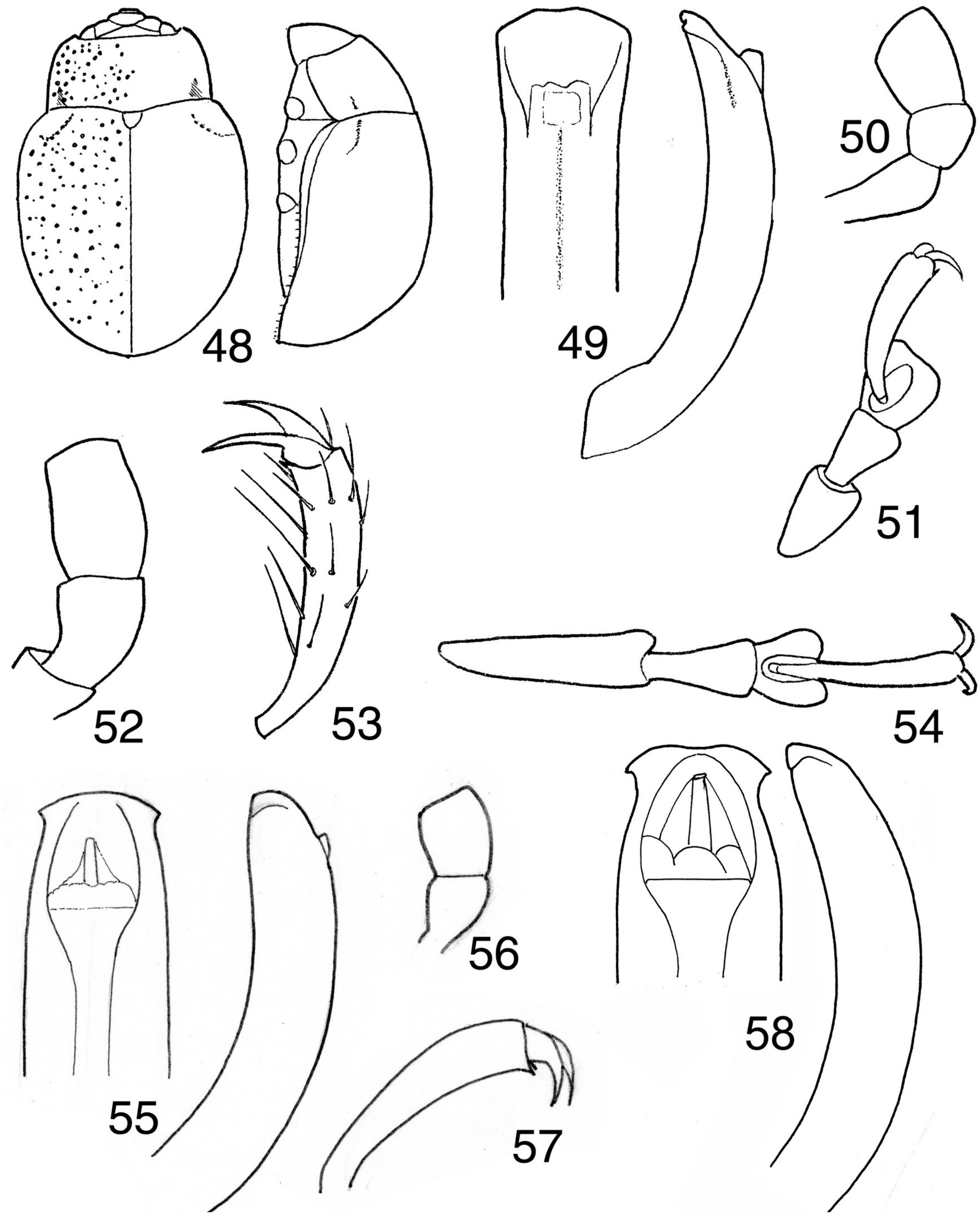
***Pierryvettia* figures 29-37:** 29–32 **–** *Chrysolina bowringii*: 29 – male (N-E India), aedeagus, dorsal and lateral view, 30–31 – female (syntype *Chrysomela stevensii*, Myanmar): 30 – mid-tarsus, 31 – maxillary palpus, 32 – male (Vietnam), aedeagus, dorsal and lateral view; 33 – *Ch. baronii*, male (India),aedeagus, dorsal and lateral view; 34–35 – left elytron, dorsal view: 34 – *Ch. separata separata* (N India), 35 – *Ch. conglomerata* (Nepal); 36–37 – *Ch. separata*

separata, female (syntype *Chrysomela perforata* Redt., N-W India): 36 – pronotum, 37 – left prothoracic hypomeron (a – lateral border, b – basal fold). (Orig.)



***Pierryvettia* figures 38–47:** *Chrysolina fulvoaenea*: 38–42 – male (syntype, India): 38 – total dorsal and lateral view, 39 – aedeagus, dorsal and lateral view, 40 – pronotum, 41 – maxillary palpus, 42 – 4th mid-tarsomere; 43–47 – male (holotype *Chrysomela madrasae*, S India): 43 –

total lateral view, 44 – fore-tarsus, 45 – pronotum, 46 – aedeagus, dorsal and lateral view, 47 – maxillary palpus. (Orig.)



***Pierryvettia* figures 48–57:** 48–51 **–** *Chrysolina fulvoaenea*, male (S India): 48 – total dorsal and lateral view, 49 – aedeagus, dorsal and lateral view, 50 – maxillary palpus, 51 – fore-tarsus; 52–54 – *Ch. karachia*, female (paratype, Pakistan): 52 – maxillary palpus, 53 – 4th hind-tarsomere, 54 – hind-tarsus; 55–57 – *Ch. baronii* (paratype *Ch. laotiana*, Laos): 55 – aedeagus, dorsal and lateral view, 56 – maxillary palpus, 57 – 4th hind-tarsomere; 58 – *Ch. baronii* (holotype, N-E India), aedeagus, dorsal and lateral view. (Orig.)

Subgenus *Pleurosticha* Motschulsky, 1860a

Diagnosis

Above moderately or sericeous shining, or dull, dark metallic or black; one species (*Ch. latimargo*) with elytra dark brown with bronze reflection.

Last maxillary palpomere oval, cylindrical or trapeziform, similar to segment 3, or not more than 1.5 X longer and wider than latter, weakly differs in both sexes.

Pronotum with convex lateral calli along entire length. Pronotal sulci strongly impressed in posterior ⅓ or ½, feeble (sometimes obsolete) near anterior margin. Anterior side marginated and ciliate. Anterior setiferous pore absent.

Prothoracic hypomeron longitudinally convex, more or less visible transverse wrinkled and usually impressed along outside. Basal fold of hypomeron distinct or weak.

Metasternum entirely marginated anteriorly.

Elytra without humeral calli, with 11 rows of dense punctures and flat or more or less convex intervals. Puncture rows regular or rows 5–7 partly irregular. Epipleura oblique in anterior ½, almost vertical in posterior ½, visible along entire length in lateral view.

Hind wings vestigial.

Male tarsomeres 1–3 wholly pubescent beneath, strongly or moderately enlarged. Female tarsomeres 1–3 moderately broad, narrower than in male, wholly pubescent beneath; mid- and hind-tarsomere 1 with more sparse pubescence along middle in basal ⅔. Claw tarsomere without denticles beneath.

Pygidium with weak longitudinal sulcus not arriving the apex.

Male last abdominal sternite medially depressed, or more or less convex, or swelled in apical part, with narrow sulcus or semi-circular impression at apex. Female last abdominal sternite medially convex or swelled in apical part, with narrow sulcus or semi-circular impression at apex.

Aedeagus very large, almost as long as abdomen, wide, with a pair of well-developed, sclerotized triangular or falciform alae (plates) at sides of apical orifice; flagellum not exposed.

Differential diagnosis

Pleurosticha

This subgenus is well different from all other *Chrysolina* subgenera by large sclerotized alae (plates) at sides of apical orifice of aedeagus. Subgenus *Pleurosticha* is related to *Ch.* (*Arctolina*), but distinguishes from the latter by more developed, exposed alae.

Peculiar characters of the subgenus *Pleurosticha*

Alae of aedeagus – a pair of well-developed, sclerotized triangular or falciform plates at sides of apical orifice of aedeagus.

Step in dorsal side of aedeagus before alae. The latero-basal border of the membranous part of aedeagus dorsal side is elevated above the plane of the membrane in some species. In this case, this border forms a "step" in lateral view (Fig. 25). In the other species, this border lies parallel to the plane of the membrane, it is invisible in lateral view ("step is absent", Fig. 23). Mikhailov (2006c) noticed the latero-basal border when it is visible in lateral view as "dorso-lateral ridge present", and when it is invisible in lateral view as "dorso-lateral ridge absent". In fact, this border (or ridge) always presents, but takes different positions.

Key to species and subspecies

1(9) Elytra with puncture rows, intervals flat or slightly convex.

2(8) Elytral puncture rows distinct on finely punctate background.

3(7) Body oblong-oval, slightly convex, depressed (Fig. 67). Elytral intervals covered by fine, but distinct punctures, these punctures as large as fine punctures at pronotal disc. Aedeagus: alae broadly triangular, pressed to aedeagus.

5(6) Above olivaceous green (Fig. 67), underside and legs black. Elytral base wider than pronotal base. Male tarsomeres 1–3 weakly broadened. Medial longitudinal impression of pygidium developed only near base. Male last abdominal sternite without impression. Apex of aedeagus bent down in arc by 30–45º; latero-basal border of membranous part invisible in lateral view, “step” absent (Fig. 58). Length: 6.0–6.6 mm (males), 6.2–7.0 mm (females). Mongolian Altai.

Ch. shapkini Mikhailov et Gus'kova, 2013

6(5) Above bluish green (Fig. 68). Elytral base as wide as pronotal base. Male tarsomeres 1–3 very broad. Medial longitudinal impression of pygidium: developed along entire length. Male last abdominal sternite with semicircular impression. Apex of aedeagus bent down in arc: by 90º; latero-basal border of membranous part slightly visible in lateral view, “step” present but weak (Figs. 32–34). Length 6.6–7.4 mm. Altai Republic.

Ch. reshetnikovi Bieńkowski, **sp. nov., in press now**. Males.

7(3) Body oval, moderately convex. Elytral intervals covered by very fine punctures, these punctures finer than punctures at pronotal disc. Head and pronotum greenish coppery, elytra bronze, or head and pronotum bronze, elytra coppery, or dorsal side unicolorous bronze; underside black with metallic reflection, antennae and legs black. Male tarsomeres 1–3 moderately enlarged. Aedeagus: alae elongate triangular, with apices directed towards each other, dorsal side without step before alae. Length: 5.9–6.8 mm (males), 6.2–7.1 mm (females). Fig. 56. S-E Tuva, Buryat.

Ch. romani Mikhailov, 2007b

8(2) Elytral puncture rows indistinct among moderately large puncturation of intervals; interval punctures the same as punctures at pronotal disc. Aedeagus: alae narrow, long, falciform or elongate-triangular, dorsal side without step before alae. Above unicolorous, dark violet, coppery or bronze, or head and pronotum dark brassy green, elytra dark bronze. Length 5.8–6.5 mm (males), 6.0–6.9 mm (females). Aedeagus very similar to that in *Ch. mordkovitshi,* but slightly curved downwards at apex in lateral view (cf. couplet 12). Figs. 8–9a, 10. Altai, S and W environs of Baikal lake.

Ch. gebleri L.Medvedev, 1979a

9(1) Elytra striato-punctate, intervals more or less convex, at least, laterally.

10(33) Elytral intervals evenly convex or ridge-shaped.

11(12) Head and pronotum blackish bronze, elytra dark brown with bronze reflection. Aedeagus: alae triangular, pressed to aedeagus, turned to middle axis, dorsal side without step before alae. Length 6.5–7.0 mm (males), 6.9–7.8 mm (females). Figs. 6, 7. Buryat, N, C Mongolia.

Ch. latimargo (Weise, 1896)

12(11) Above black or dark metallic, unicolorous or bicolorous.

13(18) Elytral row 6th, or rows 5–6th, or 6–7th, or 5–7th partly confused. Male last abdominal sternite convex, with broad transverse apical impression.

14(17) Lateral border of aedeagus near the base of alae without sharp tooth. Male 5th abdominal sternite convex, without transverse ridge before apical impression.

15(16) Body larger: length 7.0–7.4 mm (males), 7.2–7.8 mm (females). Above golden green or bronze green, elytral epipleura blue or green, underside and legs bluish black. Aedeagus: alae triangular with apical side longer than basal side, directed towards base of aedeagus, dorsal side with weak step before alae. Figs. 19, 40, 66. S Urals.

Ch. lagunovi Mikhailov, 2006d

16(15) Body smaller: length 5.9–6.3 mm (males), 6.4–7.0 mm (females). Above bronze, pronotum with weak greenish tint (or without it), underside and legs black. Male tarsomeres 1–3 strongly broadened. Aedeagus: alae falciform or elongate-triangular, dorsal side without step before alae. Aedeagus very similar to that in *Ch. gebleri,* but distinctly curved downwards at apex in lateral view (cf. couplet 8). Fig. 57. Altai.

Ch. mordkovitshi Mikhailov, 2007a

17(14) Lateral border of aedeagus near the base of alae with large sharp tooth directed to base of aedeagus. Male 5th abdominal sternite with high transverse ridge before apical impression. Female 5th abdominal sternite with very narrow apical impression. Above black with weak bronze tint. Elytral rows 5–7th irregular in basal ½. Aedeagus: alae narrow, triangular, directed towards base of aedeagus, dorsal side without step before alae. Length 6.1 mm (male), 6.9 mm (female). Tuva (Tannu-Ola Range). Figs. 21, 69.

Ch.borisi Bieńkowski, **sp. nov., in press now**.

18(13) Elytral rows regular.

19(20) Aedeagus: alae falciform or with apex drawn. Above bronze, pronotum with weak greenish tint (or without it), underside and legs black. Remark: two paratypes (examined by me) of this taxon are keyed here because they have all elytral puncture rows quite regular (see also couplet 16). Altai.

Ch. mordkovitshi Mikhailov, 2007a

20(19) Aedeagus: alae triangular, broader, neither falciform nor with apex drawn.

21(22) 5th abdominal sternite with very narrow transverse apical impression which 2.5–6.0 X (male) or 5.7–10.0 X (female) narrower than the length of the rest part of the sternite. Aedeagus with large step and narrow deep emargination dorsally before alae. Above usually violet, rarely with head, pronotum, and elytral disc partly green, underside dark green, elytral epipleura violet or green, legs black. Length 7.3–8.2 mm (males), 7.7–8.7 mm (females). Figs. 11, 12, 55, 61, 62. South of C and E Siberia.

Ch. subcostata (Gebler, 1848)

22(21) 5th abdominal sternite with broader transverse apical impression which 0.7–2.7 X (male) or 2.3– 5.8 X (female) narrower than the length of the rest part of the sternite. Aedeagus with broad gentle emargination dorsally before alae, only in *Ch. sylvatica* mostly with low step, rarely with large step.

23(28) Male 5th abdominal sternite with sharp transverse ridge separating anterior part of the sternite from deep transverse apical impression.

24(25) Alae of male aedeagus impressed before apex at the side facing to the base of aedeagus. Aedeagus dorsally with broad gentle emargination, without any step before alae. Male elytron each 2.5–2.6 X longer than wide. Elytral intervals mostly ridge-shaped, rarely convex. Above unicolorous: dark green, dark blue with golden tint, dark bronze, or black with blue tint, or bicolorous: head and pronotum dark golden green, elytra golden green; elytral epipleura, legs and underside of the body dark blue or dark golden green. Length: 6.9–7.4 mm (males), 7.3–8.3 mm (females). Figs. 18, 41–43, 63–65. W Sayans.

Ch. uraltuvensis Mikhailov, 2000a

25(24) Alae of male aedeagus mostly without impression before apex, rarely with weak impression at the side facing to the base of aedeagus. Aedeagus dorsally with low step, or without step, rarely with large step before alae. Male elytron each 2.2–2.5 X longer than wide. Elytral intervals mostly convex, rarely ridge-shaped or flat.

26(27) Aedeagus arc-shaped in lateral view; its ventral side, at the level of alae, with lateral projections, dorsal side without step before alae. Elytral intervals convex. Above bicolorous, head, pronotum, and scutellum dark green with weak bronze tint, elytra violet with green epipleura, body underside, femora and tibiae green or blue, tarsi dark brown or black, or pronotum violet and elytra green, or pronotum green and elytra coppery or bronze. Length: 6.9–8.2 (males), 7.0–8.8 (females). Fig. 59. Kuznetsky Alatau.

Ch. arctoalpina Mikhailov, 2006c

27(26) Aedeagus almost straight in lateral view; its ventral side, at the level of alae, without lateral projections, dorsal side usually with low step, rarely with large step or without step before alae. Elytral intervals mostly convex, rarely ridge-shaped or flat. Above unicolorous: bronze, violet (sometimes with dark blue tint), black, or green with coppery tint on elytra; body underside and legs black with metallic tint. Length: 7.2–8.8 mm (males), 7.6–9.6 mm (females). Figs. 13, 14, 25–31, 44–46, 55, 60. S Siberia and Podkamennaya Tunguska river valley.

Ch. sylvatica (Gebler, 1823)

28(23) Male 5th abdominal sternite without sharp transverse ridge before apical impression. Dorsal side of male aedeagus always without step before alae.

29(30) Alae of male aedeagus turned perpendicularly to longitudinal axis of aedeagus. Dorsum dark metallic (green, bronze, brassy, coppery), sometimes blackish with metallic reflection; femora and tibiae rufous, tarsi brown or blackish, or legs entirely black with metallic reflection. Length: 5.9–8.0 mm. Figs. 4, 5, 35, 36, 47–54. Chukot Penins., Kamchatka, Alaska.

Ch. cavigera cavigera (Sahlberg, 1887)

30(29) Alae of male aedeagus mostly turned toward the base of aedeagus.

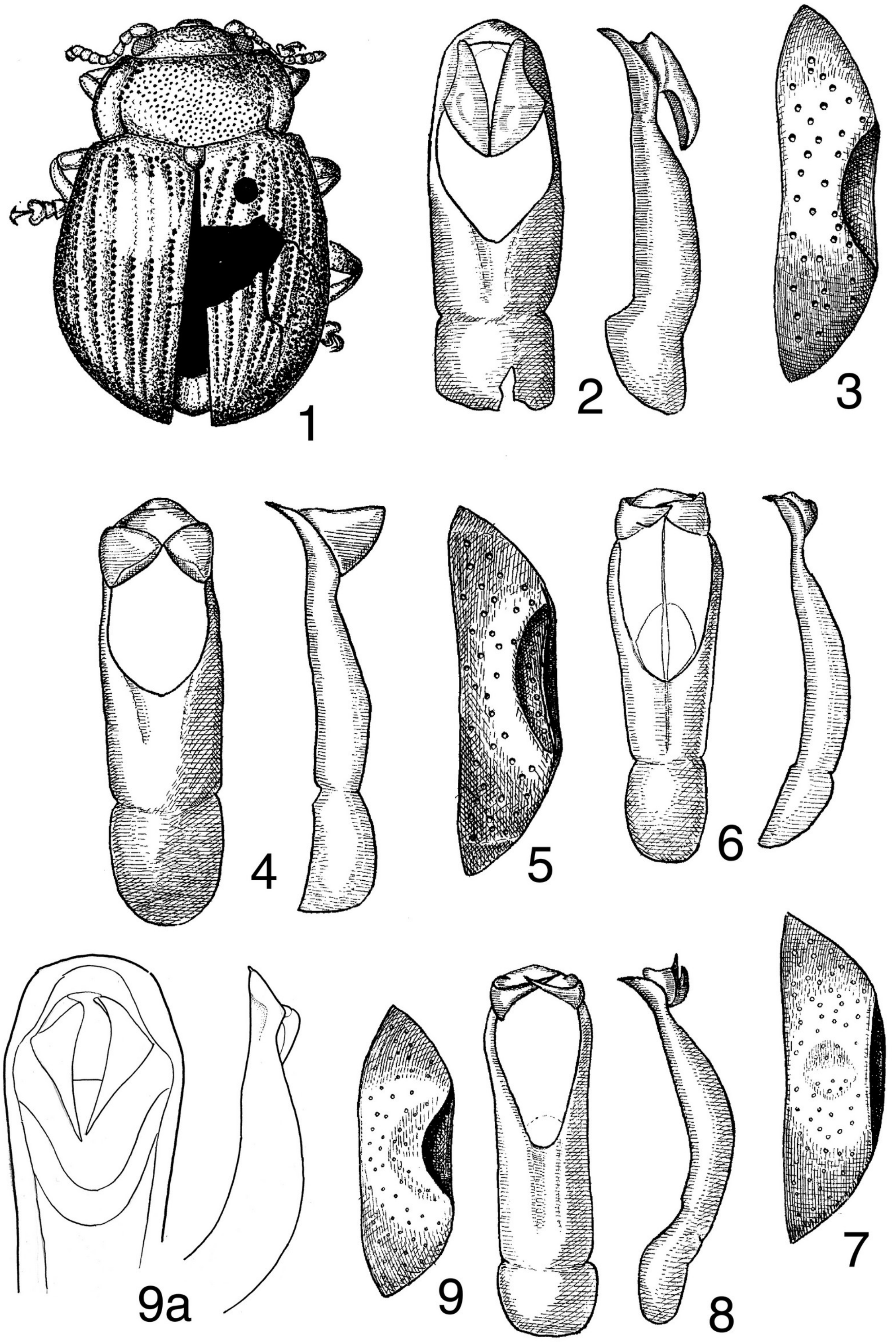
31(32) Dorsum black, sometimes with green or violet reflection; femora and tibiae always rufous, tarsi brown. Length: 6.0–8.4 mm (males), 6.7–9.2 mm (females). Figs. 1–3, 37–39. Arctic Asia.
Ch. cavigera tolli (Jacobson, 1910b)

32(31) Dorsum and legs dark metallic: blackish blue, dark violet (sometimes, with coppery tint on pronotum or elytra), dark green, rarely with legs rufous. Length: 7.4–8.5 mm (males), 7.8–8.7 mm (females). Figs. 15–17, 20, 22–24. S-E Siberia, Khabarovsk Krai, Sakhalin, Hokkaido.

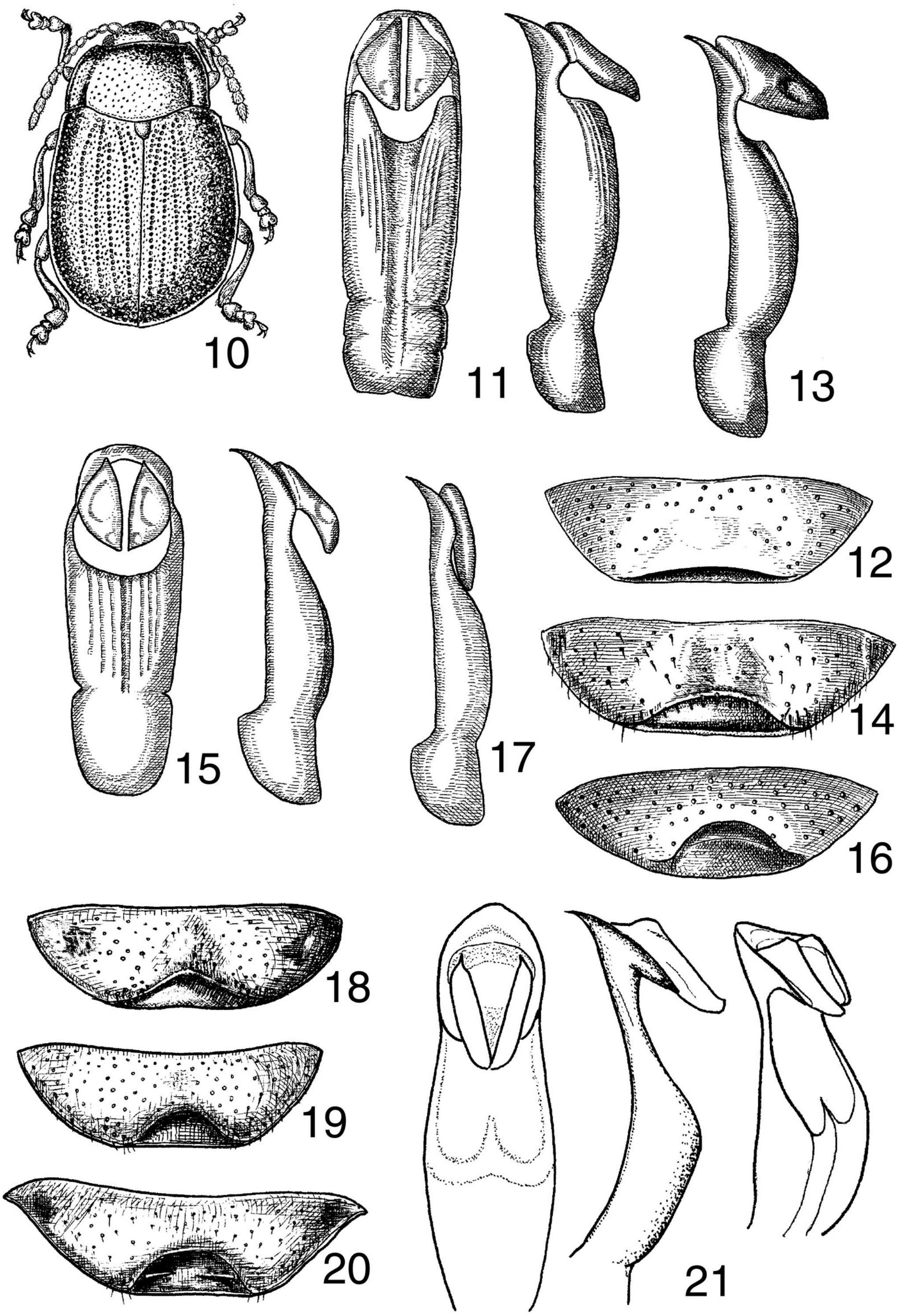
Ch. cavigera pirka Takizawa, 1970

33(10) Elytral intervals 2, 4, 6, 8, 10 weakly convex, intervals 3, 5, 7, 9 ridge-shaped (Fig. 70). Length 7.5 mm. Altai Republic. (See also couplet 6).

Ch. reshetnikovi Bieńkowski, **sp. nov., in press now**. Female.

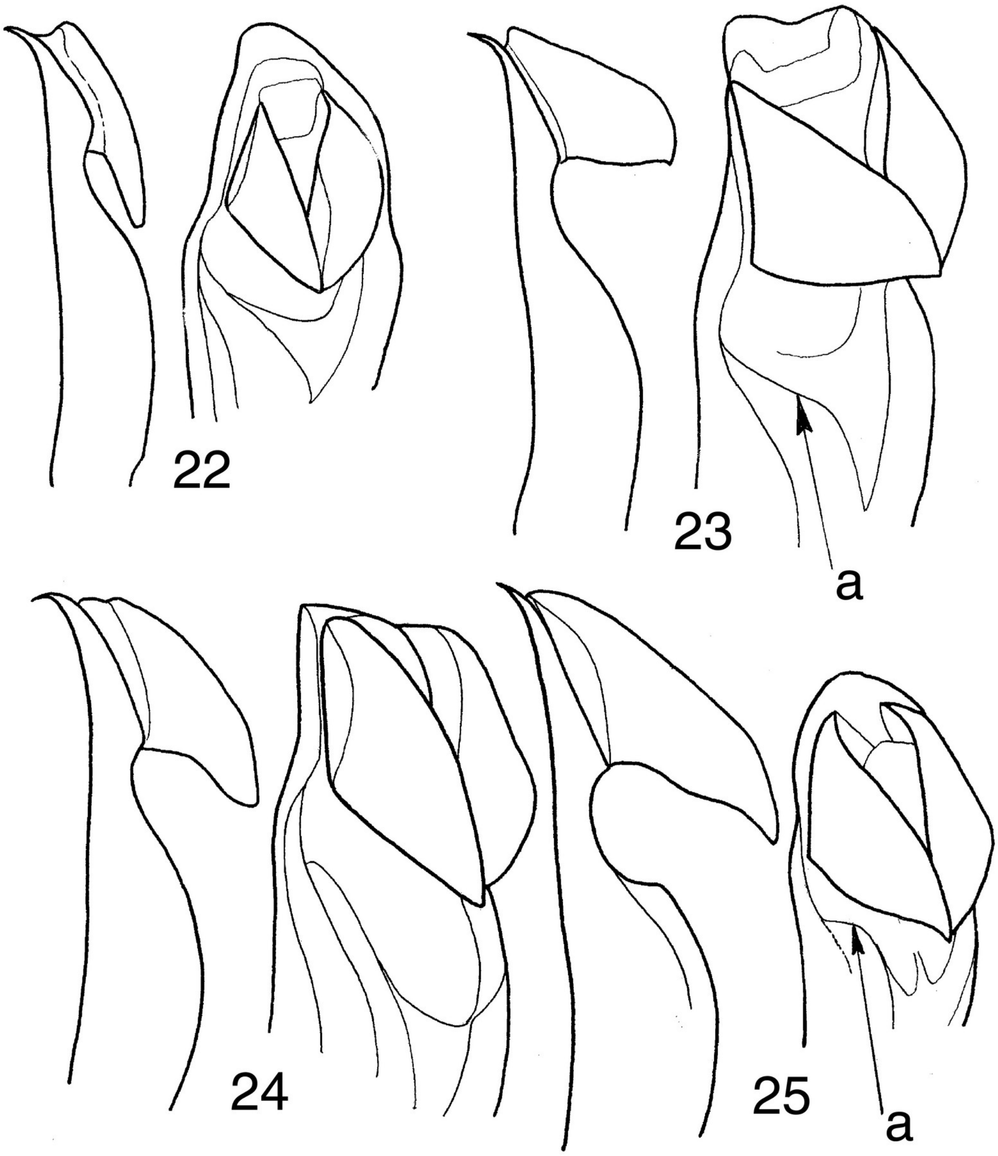


Pleurosticha **figures 1–9a:** 1–3 – *Chrysolina cavigera tolli* (lectotype *Chrysomela rufipes* Ménétriés, Arctic Siberia), male: 1 – total dorsal view, 2 – aedeagus, dorsal and lateral view, 3 – 5th abdominal sternite; 4–7 – male aedeagus, dorsal and lateral view, and 5th abdominal sternite: 4–5 – *Ch. cavigera cavigera* (Kamchatka Penins.), 6–7 – *Ch. latimargo* (Mongolia), 8–9a – *Ch. gebleri*: 8–9 – male (Altai): 8 – aedeagus, dorsal and lateral view, 9 – 5th abdominal sternite, 9a – male (Baikal lake), aedeagus, dorsal and lateral view. (Orig.)

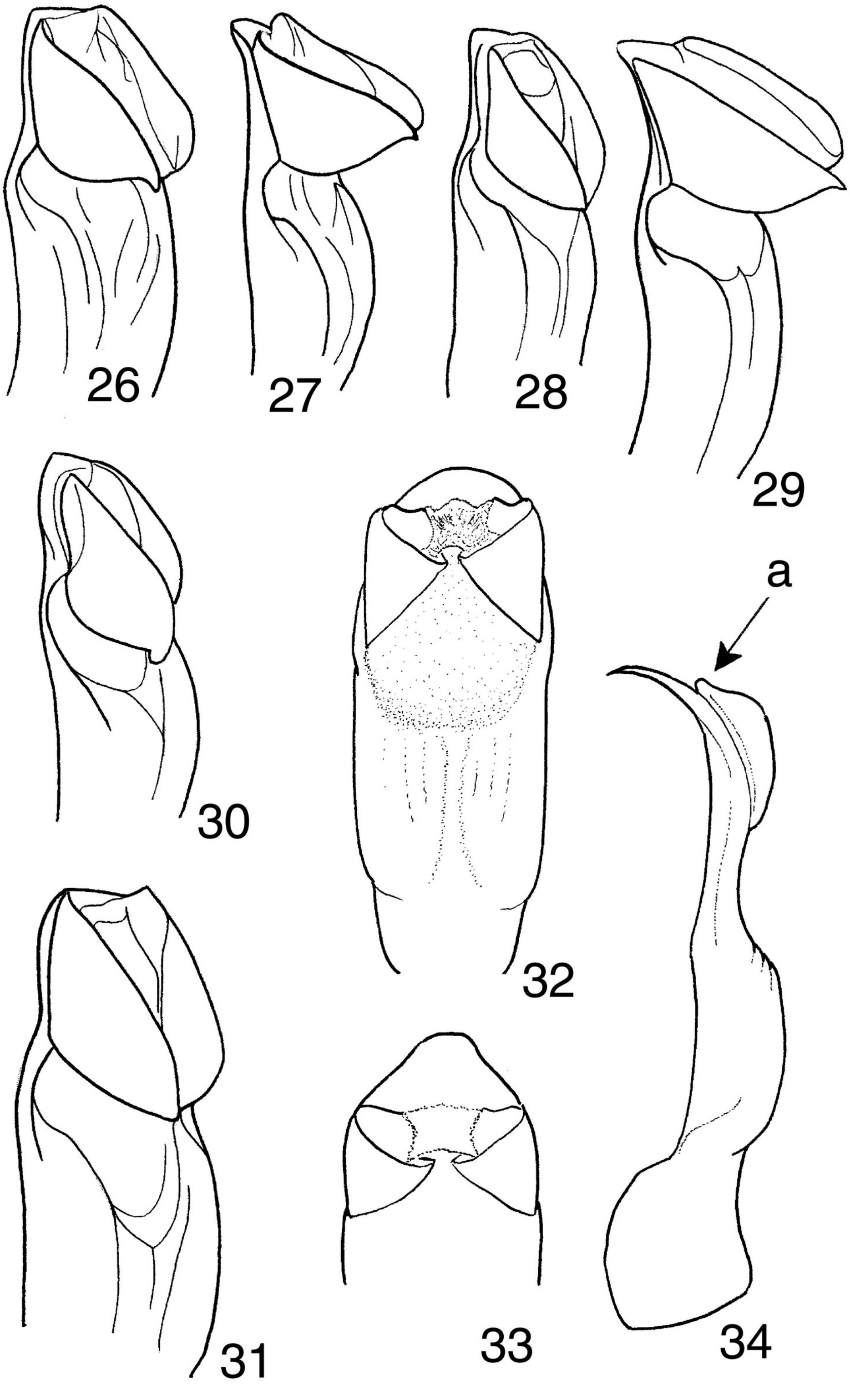


***Pleurosticha* figures 10–21:** 10 – *Chrysolina gebleri*, male (Altai); 11–12 – *Ch. subcostata*, male (Siberia, Tomsk reg.): 11 – aedeagus, dorsal and lateral view, 12 – 5th abdominal sternite; 13–14 – *Ch. sylvatica*, male (Siberia, Altai): 13 – aedeagus, lateral view, 14 – 5th abdominal sternite; 15–16 – *Ch. cavigera pirka*, male (Siberia, Buryat): 15 – aedeagus, dorsal and lateral view, 16 – 5th abdominal sternite; 17 – *Ch. cavigera pirka*, male (Far East, Khabarovsk Krai), aedeagus, lateral view; 18–20 – male 5th abdominal sternite: 18 – *Ch.*

uraltuvensis (Sayan Mts.), 19 – *Ch. lagunovi* (S Ural), 20 – *Ch. cavigera pirka* (Sakhalin Isl.); 21 – *Ch. borisi* sp. nov. in press, male (Tuva), aedeagus. (Orig.)

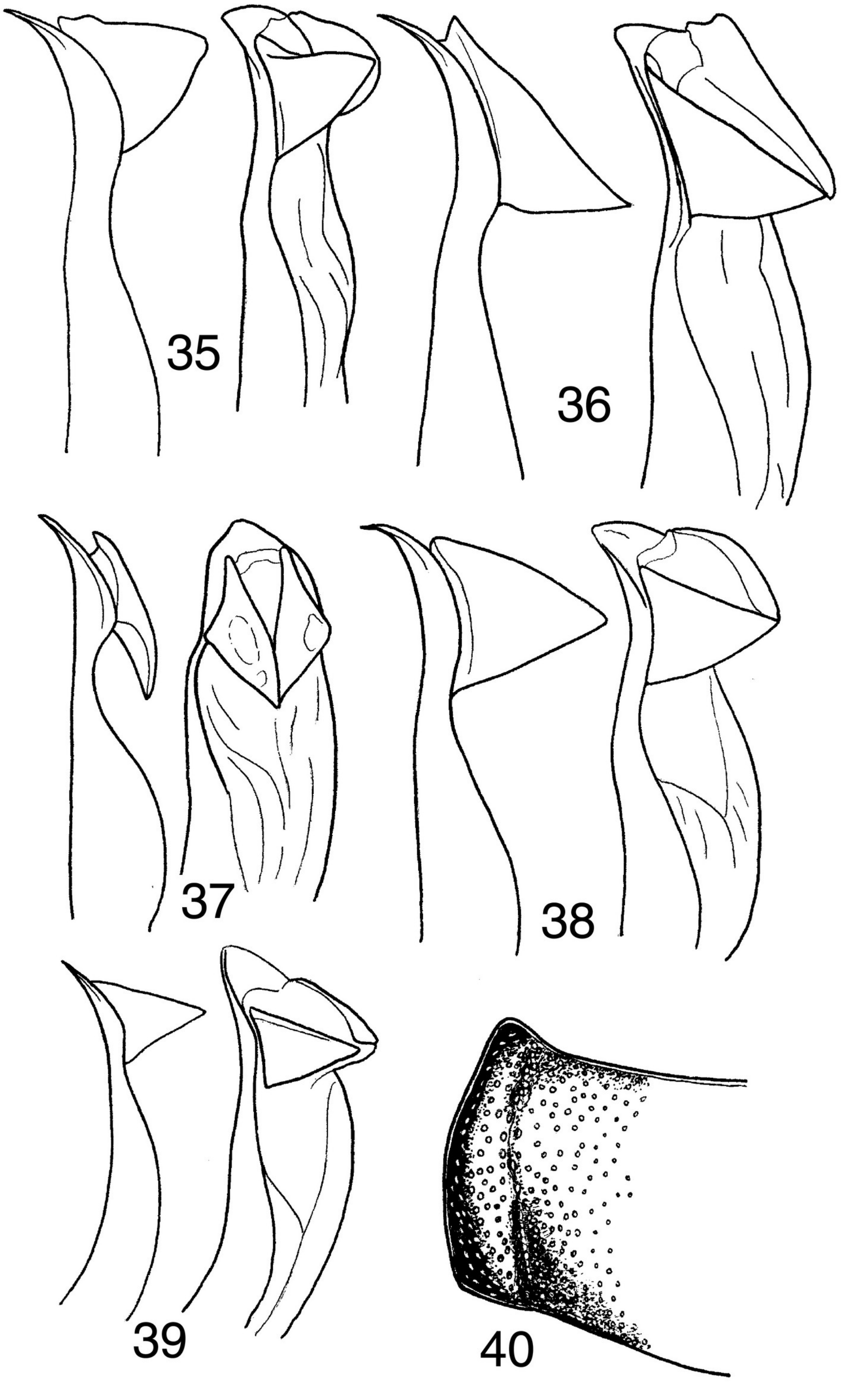


***Pleurosticha* figures 22–25:** Aedeagus variability: 22–24 – *Chrysolina cavigera pirka*: 22 – male from Far East, Sikhote Alin, 23 – male from Sakhalin Isl. (a – latero-basal border of the membranous part invisible in lateral view, "step" is absent), 24 – male from Chita reg. (topotype *Ch. tolli kodarensis*), 25 – *Ch. sylvatica* (Altai) (a – latero-basal border of the membranous part visible in lateral view, "step" is present). (Orig.)

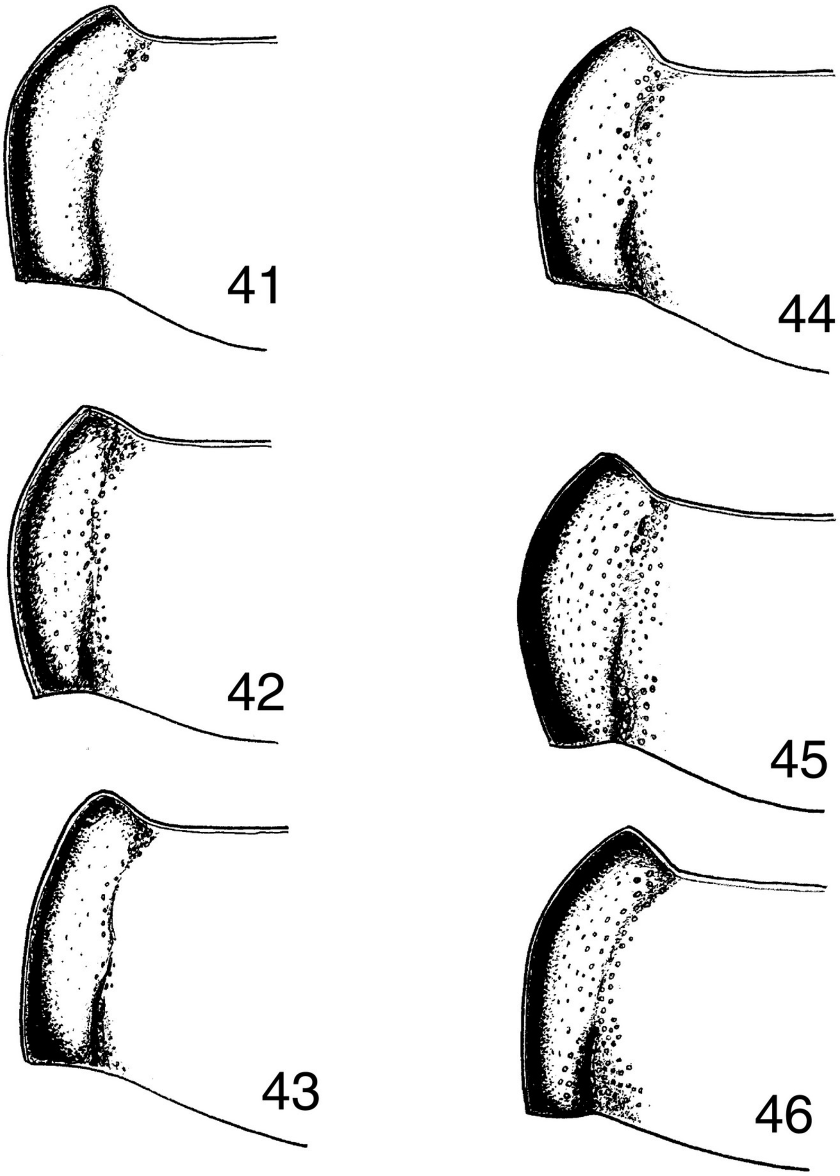


***Pleurosticha* figures 26–34:** Aedeagus: 26–31 – *Chrysolina sylvatica*, dorso-lateral view: 26–28 – males from C Altai, Kyzylart ridge, 29 – male from Altai, Chukchut ridge, 30 – male from Irkutsk reg., Kultuk, 31 – male from Sayans, Oiskoye lake; 32–34 – *Ch. reshetnikovi sp. nov.* in press (Altai Republic): 32 –

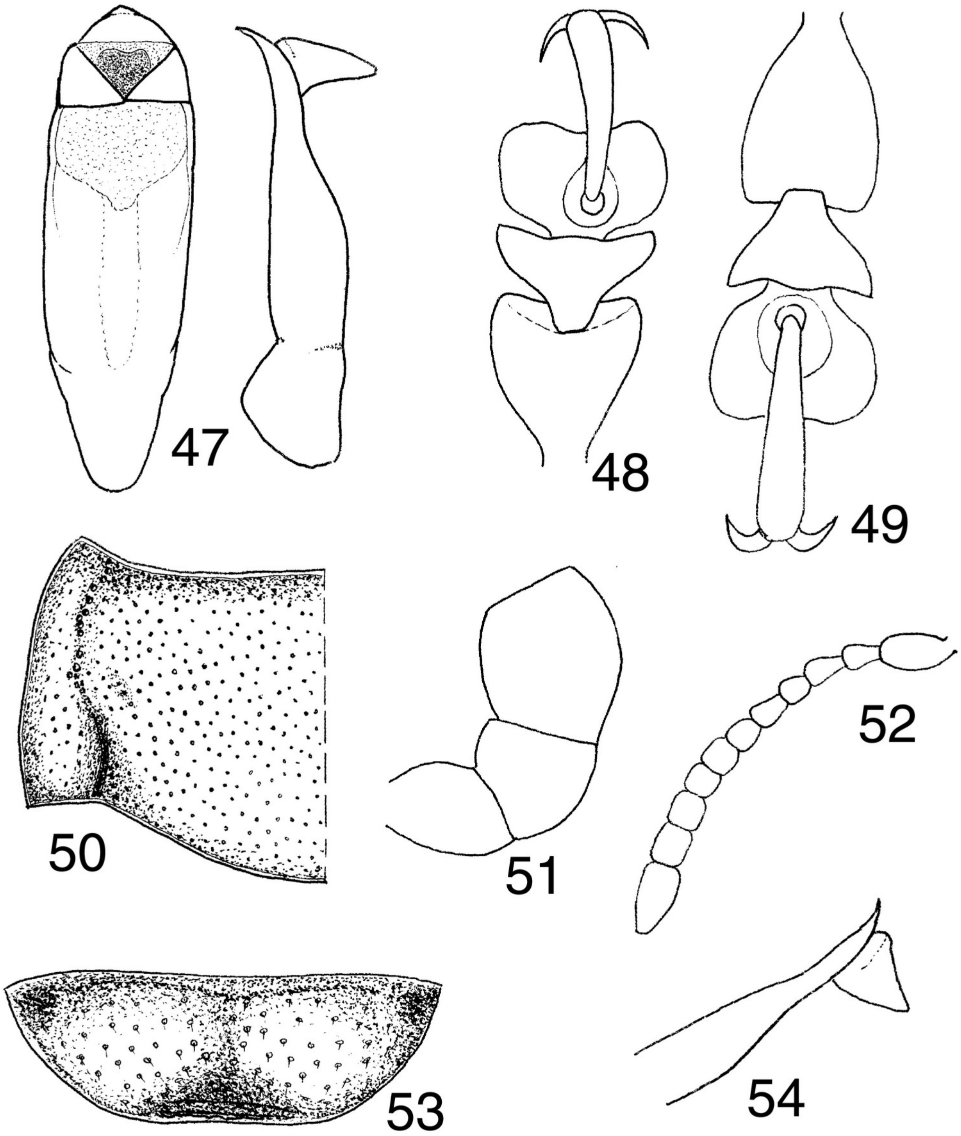
dorsal view, 33 – dorsal view of apical part arrowed in fig. 34, 34 – lateral view. (Orig.)



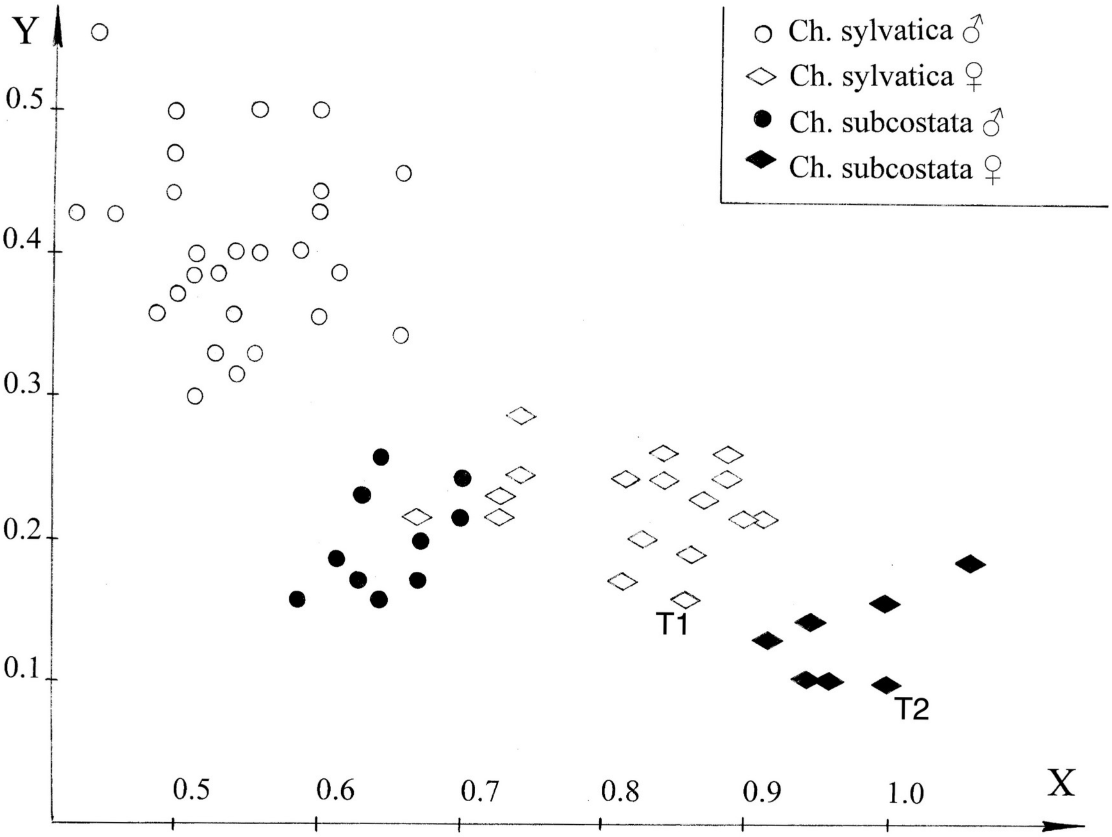
Pleurosticha **figures 35–40:** 35–39: aedeagus, lateral and dorso-lateral view: 35 – *Chrysolina cavigera cavigera* (Kamchatka), 36 – *Ch. cavigera cavigera* (Chukot Penins.), 37 – *Ch. cavigera tolli* (Wrangel Isl., Tundrovy peak), 38 – *Ch. cavigera tolli* (Wrangel Isl., Mamontovaya river), 39 – *Ch. cavigera tolli* (Taimyr Penins.); 40 – *Ch. lagunovi,* female (S Urals, Bolshoj Iremel Mt.), pronotum. (Orig.)



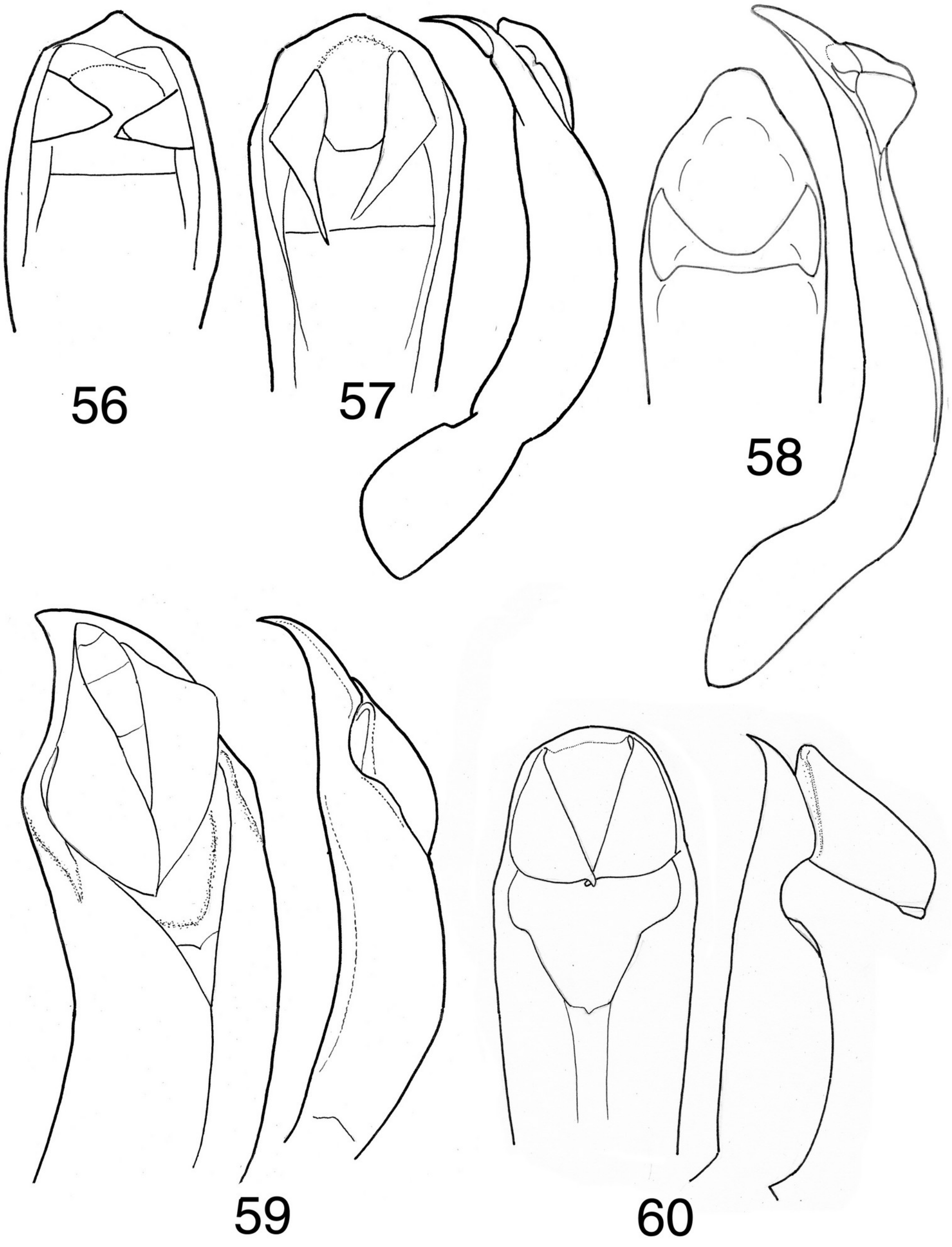
***Pleurosticha* figures 41–46:** pronotum, males, variability: 41–43 – *Chrysolina uraltuvensis* (41 – Sayans, Borus ridge, 42 – Sayans, Buiba pass, 43 – Sayans, Oiskoye lake), 44–46 – *Ch. sylvatica* (44 – Altai, Aigulaksy ridge, 45 – Altai, Kyzylart ridge, 46 – Altai, Tom’ river). (Orig.)



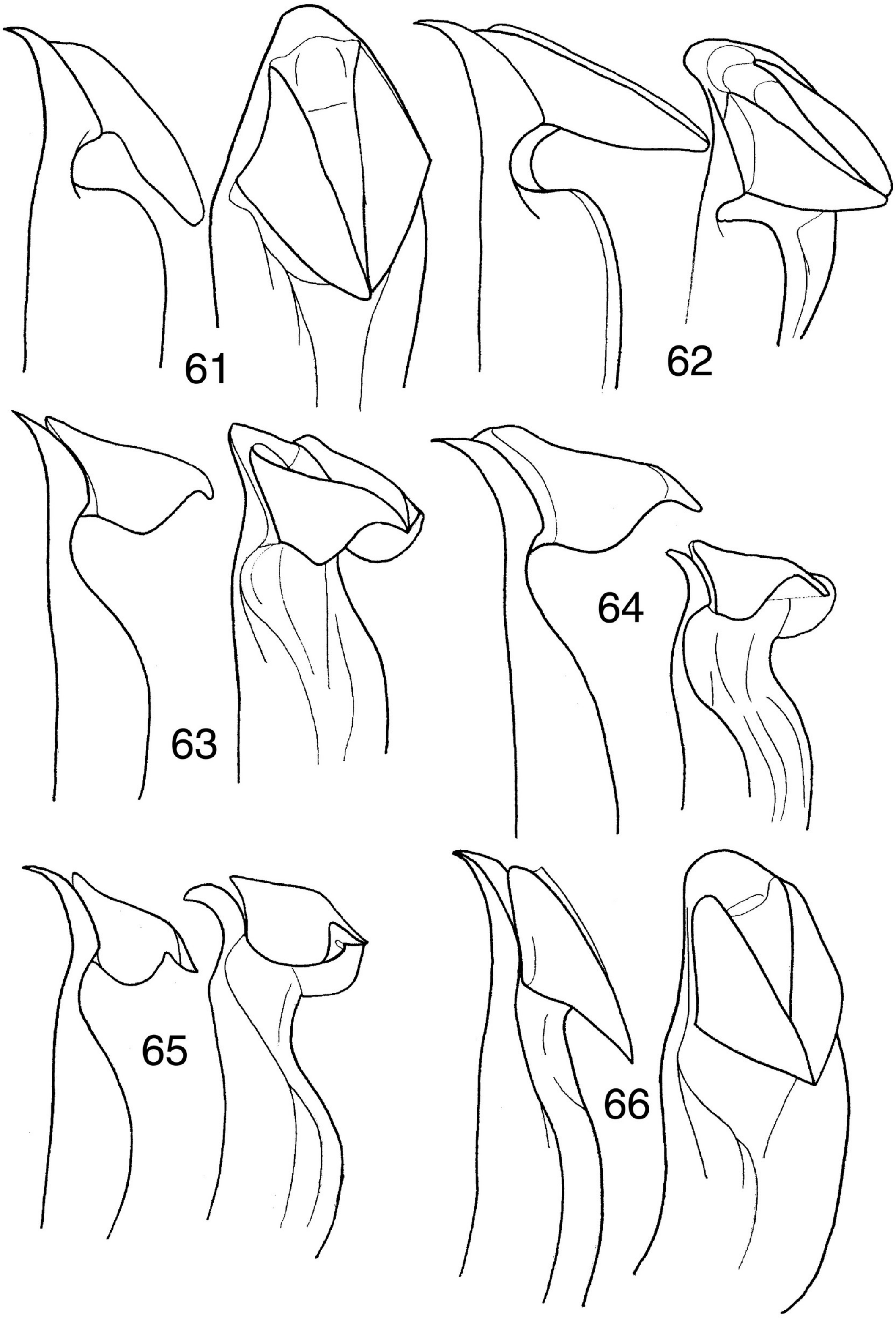
Pleurosticha **figures 47–54:** *Chrysolina cavigera cavigera*, males (Alaska, Barrow): 47 – aedeagus, dorsal and lateral view, 48 – fore-tarsus, 49 – hind-tarsus, 50 – pronotum, 51 – maxillary palpus, 52 – antenna, 53 – 5th abdominal sternite, 54 – aedeagus, lateral view (another male from the same locality). (Orig.)



Pleurosticha **figure 55:** Correlation of the length of 5th abdominal sternite before apical impression (X, mm) and the length of apical impression (Y, mm) in *Chrysolina sylvatica* and *Ch. subcostata*. The length is measured along the centerline. T1 – paralectotype *Ch. sylvatica,* T2 – neotype *Ch. subcostata*. (Orig.)

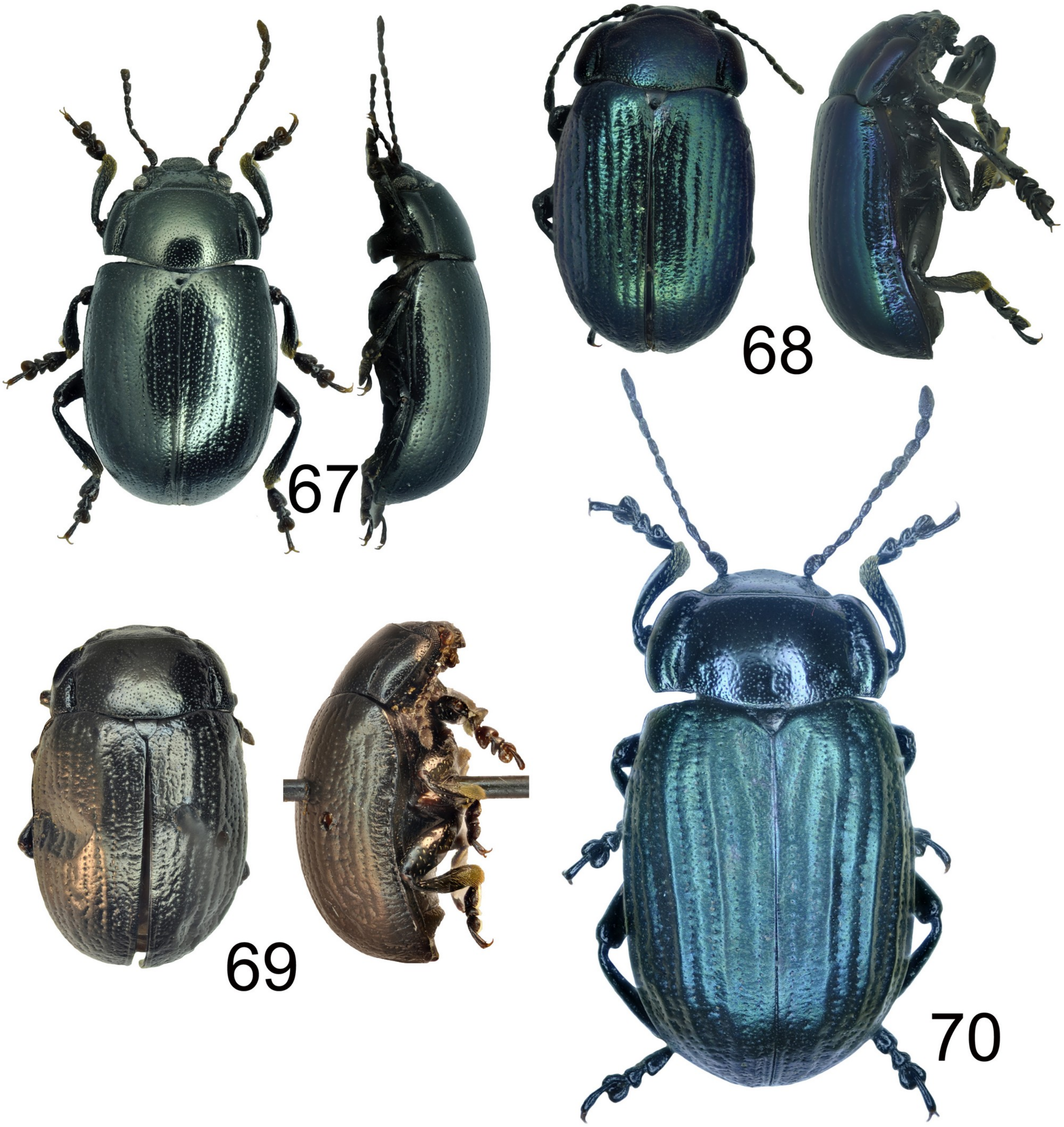


***Pleurosticha* figures 56–60:** 56 – *Chrysolina romani* (*Ch. romani romani* paratype, S-E Tuva), aedeagus, dorsal view; 57 – *Ch. mordkovitshi* (paratype, Altai), aedeagus, dorsal and lateral view; 58 – *Ch. shapkini* (holotype, Mongolian Altai), aedeagus, dorsal and lateral view; 59 – *Ch. arctoalpina* (paratype, Kuznetskyi Alatau), aedeagus, dorso-lateral and lateral view; 60 – *Ch. sylvatica* (*Ch. novozhenovi* paratype, Sayan Mts.). (Orig.)



***Pleurosticha* figures 61–66:** Aedeagus, lateral and dorso-lateral view: 61–62 – *Chrysolina subcostata*, both males from Altai, Chukchut ridge; 63–65 – *Ch. uraltuvensis*: 63 – Sayan Mts., Borus ridge, 64 – Sayan Mts., Buiba pass, 65 –

Sayan Mts., Oiskoye lake; 66 – *Ch. lagunovi*, S Urals, Bolshoj Iremel Mt. (Orig.)



***Pleurosticha* figures 67–70:** 67 – *Chrysolina shapkini,* male (holotype, Mongolian Altai), dorsal and lateral view; 68 – *Ch. reshetnikovi*, male (holotype, Altai Republic), dorsal and lateral view; 69 – *Ch. borisi*, male (holotype, Tuva), dorsal and lateral view; 70 – *Ch. reshetnikovi*, female (paratype, Altai Republic), dorsal view.